Draft

Subsequent Environmental Impact Report

Main Airfield Parcel
Record of Decision/Remedial Action Plan for
Hamilton Army Airfield

SCH# 2003042007

Prepared for:

California State Coastal Conservancy
1330 Broadway, Suite 110
Oakland, CA 94612
Contact: Tom Gandesbery
Phone: 510/286-7028

Prepared by:

Jones & Stokes
268 Grand Avenue
Oakland, CA 94610-4724
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June 2003

Jones & Stokes. 2003. Main Airfield Parcel Record of Decision/Remedial Action Plan for Hamilton Army Airfield. Draft subsequent environmental impact report. May. (J&S 03145.03 004.) Oakland, CA. Prepared for California State Coastal Conservancy, Oakland, CA.

Department of Toxic Substances Control

Edwin F. Lowry, Director
1001 "I" Street, 25th Floor
P.O. Box 806
Sacramento, California 95812-0806

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

MEMORANDUM

TO: Barbara Cook, Branch Chief
Site Mitigation Program, Region 2

FROM: Guenther W. Moskat, Chief
Planning and Environmental Analysis Section

DATE: June 11, 2003

SUBJECT: TRANSMITTAL AND REVIEW OF LEAD AGENCY ENVIRONMENTAL DOCUMENTS FOR Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh Record of Decision/Remedial Action Plan - 2003042077

The Department has received the project listed above. The project is being referred to you as a:

- ☑ Non-Essential/Information Item Only
- ☐ Sensitive Land Use Project
- ☐ Non-Sensitive land Use Project

A Courtesy Copy of the Notice of Completion Transmittal Form has also been sent to:

- ☑ Permitting Branch (document not included)

The Department is encouraged to review this project and if applicable make comments pertaining to the project as it relates to hazardous waste and/or any activities which may fall within the Department's jurisdiction. Please have your staff: 1) conduct its review of the attached document prior to the end of the comment period; 2) complete the applicable items below' stating whether the department made comments or that no comments were necessary for the document; and 3) return this original transmittal sheet and a copy of any response letter from your office to:

Planning & Environmental Analysis Section (PEAS)
CEQA Tracking Center
1001 I Street, 22nd Floor
P.O. Box 806
Sacramento, California 95812-0806
Fax (916) 323-3215

Date Comment Period Began: 06/06/2003
Comments due to OPR: 07/21/2003

Reviewed by: ______________________ Date: ______________

COMMENTS have been prepared and a copy has been provided to PEAS via:

- ☐ Attached Copy
- ☐ FAX (916) 323-3215

NO COMMENTS NECESSARY because:

- ☐ All Department concerns have been adequately addressed; OR
  Project does not fall within the Department's areas of responsibility

Thank you for your assistance with this project. If you have any questions, please contact Ken Tipon, CEQA Tracking Center, at (916) 322-5266.

Form A

Notice of Completion and Environmental Document Transmittal

SCH # 2003042077

Mail to: State Clearinghouse, PO Box 3044, Sacramento, CA 95812-3044 916/445-0613

Project Title: Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh Record of Decision/Remedial Action Plan
Lead Agency: California State Coastal Conservancy — Contact Person: Tom Gandesbery
Street Address: 1330 Broadway, 11th Floor — Telephone: (510) 286-1015
City: Oakland — Zip Code: 94612 — County: Alameda

Project Location:
County: Marin — City/Nearest Community: Novato
Cross Streets: Hanger Avenue/State Access Road — Zip Code: 94949 — Total Acres: 644
Assessor's Parcel No. n/a — Section: — Twp. 6W — Range: 2N — Base: Diablo
Within 2 Miles: State Hwy #: 101 — Waterways: Pacheco Pond, Pacheco Creek, Novato Creek, San Pablo Bay
Airports: — Railways: — Schools: Hamilton Elementary

Document Type:

CEQA: ☐ NOP ☒ Supplement/Subsequent EIR (Prior SCH No.) 1998031053 ☐ Early Cons ☐ Neg Dec ☐ Other ☐ Draft EIR

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other

Local Action Type:

Received on 6/4/03

JUN 4 2003

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☐ Other:

RECEIVED
JUN 10 2003
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
CEQA TRACKING CENTER

Development Type:

☐ Residential: *Units* — *Acres*
☐ Office: *Sq.ft.* — *Acres* — *Employees*
☐ Commercial: *Sq.ft.* — *Acres* — *Employees*
☐ Industrial: *Sq.ft.* — *Acres* — *Employees*
☐ Educational:
☐ Recreational:
☐ Water Facilities: *Type* — *MGD*
☐ Transportation: *Type*
☐ Mining: *Mineral*
☐ Power: *Type*
☐ Waste Treatment: *Type*
☒ Hazardous Waste: *Type* Remedial Action Plan
☐ Other:

Funding (approximate): Federal $ n/a — State $ n/a — Total $ n/a

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Project Issues Discussed in Document:

☐ Aesthetic/Visual ☒ Flood Plain/Flooding ☐ Schools/Universities ☒ Water Quality
☐ Agricultural Land ☐ Forest Land/Fire Hazard ☐ Septic Systems ☒ Water Supply/Groundwater
☒ Air Quality ☒ Geologic/Seismic ☐ Sewer Capacity ☒ Wetland/Riparian
☒ Archeological/Historical ☐ Minerals ☒ Soil Erosion/Compaction/Grading ☒ Wildlife
☒ Coastal Zone ☒ Noise ☐ Solid Waste ☒ Growth inducing
☒ Drainage/Absorption ☐ Population/Housing Balance ☒ Toxic/Hazardous ☒ Land Use
☐ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☒ Cumulative Effects
☐ Fiscal ☐ Recreation/Parks ☒ Vegetation ☐ Other

Present Land Use/Zoning/General Plan Designation:
Military installation/Open Space

Project Description:

The objective of the ROD/RAP is to remove and/or cover contamination in the inboard area, rendering it suitable for open-space wetland restoration. For the coastal salt marsh, the objective is to remove contaminated soils to the maximum extent practical to protect public health and to maintain its wetland function. The ROD/RAP also directly or indirectly supports the objectives of the HWRP to create a diverse array of wetland and wildlife habitats at HAAF that benefits a number of endangered species as well as other migratory and resident species.

State Clearinghouse Contact: Jm
(916) 445-0613

State Review Began: 6 - 6 - 2003

SCH COMPLIANCE 7 - 21 - 2003

Please note State Clearinghouse Number (SCH#) on all Comments

SCH#: 2003042077

Please forward late comments directly to the Lead Agency

AQMD/APCD 2

(Resources: 6 / 7)

Project Sent to the following State Agencies

X Resources
__ Boating & Waterways
X Coastal Comm
__ Colorado Rvr Bd
X Conservation
X Fish & Game # 3 Marine
__ Delta Protection Comm
__ Forestry & Fire Prot
X Historic Preservation
X Parks & Rec
__ Reclamation Board
X Bay Cons & Dev Comm
X DWR
__ OES (Emergency Svcs)

Bus Transp Hous
__ Aeronautics
__ CHP
X Caltrans # 4
__ Trans Planning
__ Housing & Com Dev
__ Food & Agriculture
__ Health Services

State/Consumer Svcs
__ General Services

Cal EPA
__ ARB – Airport Projects
__ ARB – Transportation Projects
__ ARB – Major Industrial Projects
__ Integrated Waste Mgmt Bd
__ SWRCB: Clean Wtr Prog
__ SWRCB: Wtr Quality
__ SWRCB: Wtr Rights
X Reg. WQCB # 2
X Toxic Sub Ctrl-CTC

Yth/Adlt Corrections
__ Corrections

Independent Comm
__ Energy Commission
X NAHC
__ Public Utilities Comm
__ Santa Monica Mtns
X State Lands Comm
__ Tahoe Rgl Plan Agency

__ Other:

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Appendices

Tables

Figures

Acronyms and Abbreviations

ABAG	Association of Bay Area Governments
APE	area of potential effects
ARARs	Applicable or Relevant, and Appropriate Requirements
ASR	Archive Search Report
ASTs	aboveground storage tanks
BAAQMD	Bay Area Air Quality Management District
BCDC	Francisco Bay Conservation and Development Commission
BMKV	Bel Marin Keys V
BMPs	best management practices
BRAC	Base Realignment and Closure Act of 1988
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
Conservancy	California Coastal Conservancy
CSM	coastal salt marsh
CTR	California Toxics Rule
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibels
dBA	A-weighted decibels
DDT	dichlorodiphenyltrichloroethane
DFG	California Department of Fish and Game
DOE	determination of eligibility
DTSC	California Department of Toxic Substances Control
EBEP	Enclosed Bays and Estuaries Plan
EIR	environmental impact report
EIR/EIS	environmental impact report/environmental impact statement
EPA	Environmental Protection Agency
FFS	Focused Feasibility Study
FSTP	Former Sewage Treatment Plant
GSA	General Services Administration
HAAF	Hamilton Army Airfield

HWRP	Hamilton Wetland Restoration Project
LBP	lead-based paint
Ldn	day-night average sound level
LOS	level of service
M	Richter scale magnitude
MOA	memoranda of agreement
NAHC	Native American Heritage Commission
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NOP	Notice of Preparation
NOx	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSD	Novato Sanitation District
ODD	Outfall Drainage Ditch
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCWQCA	Porter–Cologne Water Quality Control Act of 1969
PDD	Perimeter Drainage Ditch
PM_{10}	inhalable particulate matter less than 10 microns in diameter
ppm	parts per million
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
ROD/RAP	Record of Decision/Remedial Action Plan
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act of 1986
SCRs	site cleanup requirements
SFBAAB	San Francisco Bay Area Air Basin
SLC	State Lands Commission
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDLs	Total Maximum Daily Loads
TPHs	total petroleum hydrocarbons
USFWS	U.S. Fish and Wildlife Service
USTs	underground storage tanks
VOCs	volatile organic compounds
WDRs	Waste Discharge Requirements

Executive Summary

This chapter provides a brief overview of the proposed Main Airfield Parcel Record of Decision/Remedial Action Plan (ROD/RAP) for Hamilton Army Airfield (HAAF), this environmental impact report (EIR), the project goals and objectives, and environmental consequences of the proposed project.

Project Overview

The ROD/RAP presents the actions to be taken at the main airfield parcel and in the adjacent coastal salt marsh area to address residual contamination protective of potential wetland use of the site. The ROD/RAP has been developed by the United States Department of the Army, (Army) and the California Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) (collectively referred to as the State).

Wetland restoration of the main airfield parcel is proposed as part of the Hamilton Wetland Restoration Project (HWRP). The California Coastal Conservancy (Conservancy), as the local lead agency for the HWRP, is the lead agency for this subsequent EIR (SEIR) pursuant to the California Environmental Quality Act (CEQA). DTSC and RWQCB must approve the ROD/RAP, which is a discretionary act subject to CEQA.

The HWRP was evaluated in a final environmental impact report/environmental impact statement (EIR/EIS) that was certified in December 1998. Details of the nature and extent of residual contamination and the appropriate actions necessary to address it were not known in 1998 when the HWRP EIR/EIS was completed. This SEIR evaluates the potential environmental effects of activities in the ROD/RAP and identifies measures to minimize or avoid any environmental effects determined to be potentially significant.

Project Location

The proposed project is located at the HAAF, a former military installation located adjacent to San Pablo Bay in the City of Novato, Marin County, California (see Figure 2-1 in main volume). The surrounding area is a combination of residential and commercial use with large, undeveloped open space, agriculture, and wetlands.

The HAAF main airfield parcel occupies approximately 644 acres, which includes the inboard area (the former airfield and eastern perimeter levee) and approximately 10 acres of coastal salt marsh east of the levee (see Figure 2-2 in main volume). An additional 78 acres of coastal salt marsh in the project area is owned by the SLC. The ROD/RAP addresses sites in both the inboard and coastal salt marsh areas, including coastal salt marsh lands owned by the SLC, and a single site on the adjacent Navy ball fields parcel (Spoils Pile N).

Goal and Objectives

The objective of the ROD/RAP is to remove and/or cover contamination in the inboard area, rendering it suitable for open-space wetland restoration. For the coastal salt marsh, the objective is to remove contaminated soils to the maximum extent practical to protect public health and to maintain its wetland function. The ROD/RAP also directly or indirectly supports the objectives of the HWRP to create a diverse array of wetland and wildlife habitats at HAAF that benefits a number of endangered species as well as other migratory and resident species.

Main Airfield Parcel ROD/RAP

The proposed ROD/RAP documents the selected environmental response actions to be taken to address potential risks associated with residual contaminants on the main airfield parcel and the adjacent coastal salt marsh, and restoration of a wetland at HAAF. The ROD/RAP summarizes the following:

1. Lists those sites that have been investigated during the remedial investigation and those that require further investigation.
2. Establishes target cleanup levels (action goals) for all contaminants on the property based on an assessment of the human and ecological risk for each contaminant during construction and maturation of the wetland.
3. Identifies the goals (Remedial Action Objectives [RAOs]) that each remedial action is intended to achieve in terms of protecting human health and the environment by removing or reducing residual contaminants to their respective action goals or eliminating exposure to contaminants.
4. Describes the selected response actions (remedial strategies) for each site in order to achieve the RAOs.

The term "environmental actions" in the ROD/RAP relates to two types of actions: (1) response actions by the Army Base Realignment and Closure Act (BRAC) program, and (2) environmental assurance actions by the Army Civil Works Program as part of the HWRP. The Army BRAC program would perform environmental response actions to benefit the future land use plans for wetland restoration. The Army Civil Works Program, through the HWRP, would take actions to address the potential risks posed by dichlorodiphenyltrichloroethane

(DDT) throughout the inboard area, and polynuclear aromatic hydrocarbons (PAHs) in soils adjacent to the runway.

The ROD/RAP also includes several issues that would be addressed by the BRAC program. These issues are referred to as "other BRAC environmental considerations." These include four sites identified in the Archive Search Report and the General Services Administration (GSA) and BRAC soil stockpiled on the runway. The ROD/RAP addresses one site (Spoils Pile N) on the adjacent Navy ball fields parcel. This parcel is under Navy ownership and any other residual contamination issues would be addressed by the Navy.

For the Army BRAC sites, the ROD/RAP evaluated three remedial strategies:

- No Further Action,
- Excavation and Offsite Disposal, and
- Manage in-Situ, with Monitoring and Maintenance, for Army BRAC Sites.

For the HWRP issues, the ROD/RAP evaluated two remedial strategies:

- No Further Action, and
- Manage on Site, with Monitoring and Maintenance, for Army Civil Works Issues.

The ROD/RAP also proposes that soils containing LBP be managed on-site as part of the HWRP.

Tables ES-1 and ES-2 lists the ROD/RAP sites and issues according to the remedial strategy proposed in the ROD/RAP. The contaminants of concern at each site and the ROD/RAP action goal for each contaminant are also presented in these tables. (In Chapter 2, the inboard sites are shown on Figure 2-3, coastal salt marsh sites are shown on Figure 2-4, and DDT and PAH areas are shown on Figure 2-5.)

Environmental Consequences

This SEIR evaluates the environmental consequences of the proposed ROD/RAP. A summary of the impact analysis is presented in Table ES-3 below.

Table ES-1. Summary of Remedial Strategies and Contaminants of Concern for Inboard Sites

Site	Contaminants and Inboard Action Goals (ppm)																					
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
No Further Action																						
Revetment 18/Bldg. 15																						
Building 20																						
Building 84/90 Area																						
PDD Spoils Pile E																						
PDD Spoils Pile H																						
East Levee Generator Pad																						
NW Runway Area										X	X											
Tarmac East of Outparcel A-5																						
Radiological Waste Disposal Cylinders																						
Revetment 5																						
Revetment 8																						
Revetment 9																						
Revetment 10																						
Revetment 15												X										
Revetment 17																						
Revetment 20												X										
Revetment 24																						
Revetment 27																						
Revetment 28																						

Table ES-1. Continued

Site	Contaminants and Inboard Action Goals (ppm)																				
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
Excavation and Off-site Disposal																						
Building 35/39 Area					X																	
Building 41 Area	X				X																	
Perimeter Drainage Ditch (PDD) unlined							X			X												
PDD lined (proposed wetland channel)							X			X												
PDD Spoils Pile F					X		X	X		X				X		X	X		X			X
Revetment 6		X																				
Revetment 7							X					X				X						
In-Situ Management*																						
Former Sewage Treatment Plant					X																	
Building 26	X																					
Building 35/39 Area					X																	
Building 82/87/92/ 94 Area									X	X												
Building 86							X			X		X	X									
PDD lined (outside wetland channel)							X			X												
PDD Spoils Pile A					X					X												X
PDD Spoils Pile B												X			X			X		X		X
PDD Spoils Pile C					X																	
PDD Spoils Pile D					X																	
PDD Spoils Pile G					X																	
PDD Spoils Pile I					X					X												
PDD Spoils Pile J					X																	
PDD Spoils Pile K					X																	
PDD Spoils Pile L									X					X		X						X
PDD Spoils Pile M					X																	
PDD Spoils Pile N					X											X						
Onshore Fuel Line (ONSFL)		X																				

Table ES-1. Continued

Site	Contaminants and Inboard Action Goals (ppm)																					
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
ONSFL – Hangar Segment		X	X				X															
ONSFL – Northern Segment	X	X		X																		
Revetment 1							X		X			X				X						
Revetment 2												X				X						
Revetment 3									X						X		X					
Revetment 4												X				X						
Revetment 11															X							
Revetment 12															X							
Revetment 13							X					X				X						
Revetment 14	X																					
Revetment 16									X													
Revetment 19	X	X					X		X			X			X	X						
Revetment 21	X	X													X						X	
Revetment 22	X	X																				
Revetment 23															X							
Revetment 25	X								X													
Revetment 26	X	X							X		X						X					
On-site Management**																						
Inboard Area-wide DDTs; PAHs in soils adjacent to runway					X		X															
Lead Based Paint																X						

Table ES-1. Continued

Site	Contaminants and Inboard Action Goals (ppm)																					
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
Remedial Approach to be Determined* **																						
Testing Range (ASR Site #4)																						
Alleged Hazardous, Toxic, and Radiological Waste Disposal Site (ASR Site #8)																						
Skeet Range (ASR Site #18)																						
Firing-In-Butt (ASR Site #19)																						
GSA & BRAC Soil Stockpiles																						

*With monitoring and maintenance for Army BRAC Sites.

**With monitoring and maintenance for Army Civil Works Program.

*** If cleanup is determined to be necessary based on further investigations, cleanup would be conducted in accordance with the goals and objectives of the ROD/RAP. For purposes of analysis in this SEIR it is assumed that all ASR sites and approximately 10 percent of the GSA/BRAC soil stockpiles would be excavated and disposed of off site.

Table ES-2. Summary of Remedial Strategies and Contaminants of Concern for Coastal Salt Marsh Sites

Site	Contaminants and Coastal Salt Marsh Action Goals (ppm)													
	Diesel Range Hydrocarbons	Endrin aldehyde – 0.0064	Heptachlor – 0.0088	Heptachlor epoxide – 0.0088	Total Dioxin Equivalents – 0.000021	BHC – 0.0048	DDT – 0.03	DDT 1.0	Dichlorprop – 0.14	MCPA – 7.9	MCPP – 3.0	Methoxychlor – 0.09	Motor Oil	PAH – 4.022
Excavation and Off-site Disposal														
Antenna Debris Disposal Area	X	X	X	X		X	X			X	X		X	
East Levee Construction Debris Disposal Area	X				X		X							
High Marsh Area														
• Non-channel Cut Area		X					X							
• Proposed Channel Cut		X					X						X	
Historic Outfall Drainage Ditch									X					
Outfall Drainage Ditch	X	X					X						X	
Boat Dock														
• Non-channel Area				X		X	X					X		X
• Channel Area														
Area 14							X						X	X
Former Sewage Treatment Plant Outfall and Pipe							X							

Site	PCB – 0.09	Pentachlorophenol – 0.017	Phenol – 0.13	Chlordanes – 0.00479	Barium - 188	Beryllium – 1.68	Cadmium – 1.8	Cobalt – 26.7	Copper – 88.7	Lead – 46.7	Manganese - 1260	Mercury – 0.58	Nickel - 132	Silver – 1.0	Zinc - 169
Excavation and Off-site Disposal															
Antenna Debris Disposal Area	X			X	X	X	X	X	X	X	X		X	X	X
East Levee Construction Debris Disposal Area	X									X					X
High Marsh Area															
• Non-channel Cut Area	X			X		X		X	X	X	X		X	X	X
• Proposed Channel Cut				X		X	X	X		X			X		
Historic Outfall Drainage Ditch							X	X		X	X		X		X
Outfall Drainage Ditch	X	X	X	X		X	X	X		X	X		X	X	X
Boat Dock															
• Non-channel Area				X						X					X
• Channel Area					X				X	X					X
Area 14								X							
Former Sewage Treatment Plant Outfall and Pipe				X					X	X		X		X	X

Table ES-3. Summary of Impacts and Mitigation Measures

Impact	Significance Determination	Mitigation Measure	Significance Determination with Mitigation Incorporation
Geology, Soils, and Seismicity			
Impact G-1: Potential Short-Term Increase in Erosion and Sedimentation Rates during Construction.	Less than Significant		
Impact G-2: Potential Damage to Levees Resulting from Remedial Activities	Less than Significant		
Water Resources			
Impact WQ-1: Potential Long-Term Degradation of Surface Water and Sediment Quality from Residual Contamination.	Less than Significant		
Impact WQ-2: Potential for Long-term Degradation of Surface Water and Sediment Quality from Exposure of Contaminants by Channel Scour.	Less than Significant		
Impact WQ-3: Potential for Short-Term Degradation of Surface Water and Sediment Quality from Remediation Activities.	Less than Significant		
Impact WQ-4: Potential Degradation of Groundwater Quality.	Less than Significant		

Table ES-3. Continued

Impact	Significance Determination	Mitigation Measure	Significance Determination with Mitigation Incorporation
Public Health			
Impact PH-1: Increase of Potential Mosquito Breeding Habitat.	Less than Significant		
Biological Resources			
Impact BIO-1: Loss of Tidal Coastal Salt Marsh.	Significant	Mitigation Measure BIO-1: Monitor Site Development and Implement Actions to Increase the Rate of Marsh Development if Required.	Less than Significant
Impact BIO-2: Temporary Disturbance to Special-Status Birds Occupying Coastal Salt Marsh Habitat.	Significant	Mitigation Measure BIO-2: Conduct Preconstruction Surveys to Locate Northern Harrier, California Black Rail, California Clapper Rail, Saltmarsh Common Yellowthroat, and San Pablo Song Sparrow Nest Sites before Remediation Activities Are Initiated.	Less than Significant
Impact BIO-3: Potential for Direct Mortality of Salt Marsh Harvest Mice during Remediation-Related Ground Disturbance.	Significant	Mitigation Measure BIO-3: Remove Salt-Marsh Harvest Mouse Habitat and Install Barrier Fencing.	Less than Significant
Impact BIO-4: Temporary Disturbance to Special-Status Birds That Occupy Brackish Marsh Habitat.	Significant	Mitigation Measure BIO-4: Conduct Preconstruction Surveys to Locate California Black Rail, Short-Eared Owl, Osprey, Northern Harrier, and Saltmarsh Common Yellowthroat Nest Sites before Remediation Activities Are Initiated.	Less than Significant

Tab‿ ‿-3. Continued

Impact	Significance Determination	Mitigation Measure	Significance Determination with Mitigation Incorporation
Impact BIO-5: Potential for Mortality of Burrowing Owls.	Significant	Mitigation Measure BIO-5: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures To Avoid or Minimize Adverse Effects if Owls Are Present.	Less than Significant
Impact BIO-6: Disturbance of Roosting and Foraging Habitat for Special-Status Bat Species.	Significant	Mitigation Measure BIO-6: Conduct Preconstruction Bat Survey in Suitable Habitat.	Less than Significant
Impact BIO-7: Temporary Disturbance of Fish in San Pablo Bay during Construction.	Less than Significant		Less than Significant
Land Use and Utilities			
Impact LAND-1: Consistency with Appropriate Plans for the Project Site.	Less than Significant		
Impact LAND-2: Potential Impact to Existing Utilities.	Less than Significant		
Impact LAND-3: Potential Impact to Existing Easements.	Less than Significant		
Impact LAND-4: Compatibility with Adjacent Land Uses.	Less than Significant		
Hazardous Substances and Waste			
Impact HAZ-1: Create a Significant Hazard to the Human Health or the Environment from Contaminants Remaining on the Site.	Less than Significant		

Table ES-3. Continued

Impact	Significance Determination	Mitigation Measure	Significance Determination with Mitigation Incorporation
Impact HAZ-2: Create a Significant Hazard to the Human Health or the Environment from Release of Contaminants by Channel Scour.	Less than Significant		
Impact HAZ-3: Create a Significant Hazard to the Human Health or the Environment through the Release of Contaminants during Site Clean Up.	Less than Significant		
Transportation			
Impact T-1: Change in LOS at Important Intersections and Roadway Segments during Construction.	Less than Significant		
Impact T-2: Impacts to Freeway Level of Service during Remediation.	Significant and Unavoidable		
Air Quality			
Impact A-1: Emissions of Fugitive Dust from Remediation Activities.	Significant	Mitigation Measure A-1: Control Fugitive Dust Emissions in Accordance with BAAQMD Standards.	Less than Significant
Impact A-2: Construction-Related Emissions of Ozone Precursors from Terrestrial Equipment and Vehicles.	Less than Significant		
Noise			
Impact N-1: Potential Increases in Traffic Noise Levels.	Less than Significant		

Tab. ᴊ-3. Continued

Impact	Significance Determination	Mitigation Measure	Significance Determination with Mitigation Incorporation
Impact N-2: Temporary Increases in Noise Levels to More Than 60 dBA during Construction.	Significant	Mitigation Measure N-1: Employ Noise-Reducing Construction Practices.	Less than Significant
Cultural Resources			
Impact CR-1: Potential Impacts to Buried Cultural Deposits or Human Remains.	Significant	Mitigation Measure CR-1: Stop Work if Buried Cultural Deposits Are Encountered during Remedial Activities. Mitigation Measure CR-2: Stop Work if Human Remains Are Encountered during Remedial Activities.	Less than Significant

Chapter 1
Introduction

This chapter provides a brief overview of the proposed project, the Main Airfield Parcel Record of Decision/Remedial Action Plan (ROD/RAP) for Hamilton Army Airfield (HAAF), and this environmental impact report (EIR). Background information on HAAF and the Hamilton Wetland Restoration Project (HWRP) is provided as well as a description of the EIR, including the intent and scope of the EIR, the environmental impact review requirements that must be met prior to project approval, and the EIR organization.

Project Overview

The ROD/RAP presents the actions to be taken at the former HAAF main airfield parcel and in the adjacent coastal salt marsh area to address residual contamination, pursuant to the ultimate use of the site for wetland restoration. The California Coastal Conservancy (Conservancy), as the local lead agency for wetland restoration at the site, is preparing this subsequent EIR pursuant to the California Environmental Quality Act (CEQA). The SEIR evaluates the potential environmental effects of activities in the ROD/RAP and identify measures to minimize or avoid any environmental effects determined to be potentially significant. Approval of the ROD/RAP by the California Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) (collectively referred to as the State) is a discretionary action subject to CEQA.

Wetland restoration of the main airfield parcel is proposed as part of the HWRP, which was evaluated in a final environmental impact report/environmental impact statement (EIR/EIS) that was certified in December 1998. Although it was assumed that residual contamination would be addressed at the site before implementation of the HWRP, details of the nature and extent of residual contamination and the appropriate actions necessary to address it were not known in 1998 when the HWRP EIR/EIS was completed. This subsequent EIR has therefore been prepared to evaluate the potential for environmental impacts from the actions proposed in the ROD/RAP.

Background

Site Background

HAAF was constructed on reclaimed tidal wetland by the U.S. Army Air Corps in 1932. Before 1932, the area was known as Marin Meadows and had been used as ranch and farmland since the Mexican Land Grant (U.S. Army Corps of Engineers undated). Military operations began in December 1932. Bombers, transport, and fighter aircraft were based at the airfield. HAAF played a major role in World War II as a training field and staging area for Pacific Theater operations. The airfield was renamed Hamilton Air Force Base in 1947, when it was transferred to the newly created U.S. Air Force.

In the mid-1960s, the U.S. Air Force began to curtail base operations because of increased complaints about aircraft noise and concerns for air traffic and public safety (Earth Technology Corporation 1994). In 1974, the U.S. Air Force deactivated the base and initiated transfer of the property to other military or government agencies. In the transfer process, the residential portion of the installation, along with support facilities, was transferred to the U.S. Navy in 1975. Custodial management of other areas was assumed by the General Services Administration (GSA).

In 1976, the Army was given permission to use the runway and ancillary facilities and several other buildings for regular Army and Army Reserve operations. A parcel in the hangar area went to the U.S. Coast Guard in 1983. The Army continued to use portions of HAAF on a permit basis until 1984, when portions of the airfield were officially acquired by the Army and property management responsibilities were transferred to the Presidio of San Francisco. Aircraft operations were again discontinued in 1994 when the base was closed.

Hamilton Wetland Restoration Project Background

The Base Realignment and Closure Act of 1988 (BRAC) mandated closure of HAAF. Disposal and a variety of reuse options were considered in the HAAF Disposal and Reuse EIS. In 1998, the Conservancy developed a feasibility analysis and conceptual plan for wetland restoration on the main airfield parcel and the adjacent State Lands Commission (SLC) antenna field parcel. The Army anticipates transferring approximately 630 acres of the HAAF Main Airfield parcel to the Conservancy to become part of the HWRP.

The HWRP, as currently authorized, would involve restoration on approximately 950 acres of habitat and create 570 acres of new tidal wetlands on HAAF and on the Navy ball fields parcel and the SLC parcel (also known as the North Antenna Field), which is owned by the State of California and administered by the SLC (Figure 1-1). The HWRP may also be expanded to include wetland restoration on the adjacent Bel Marin Keys V (BMKV) property.

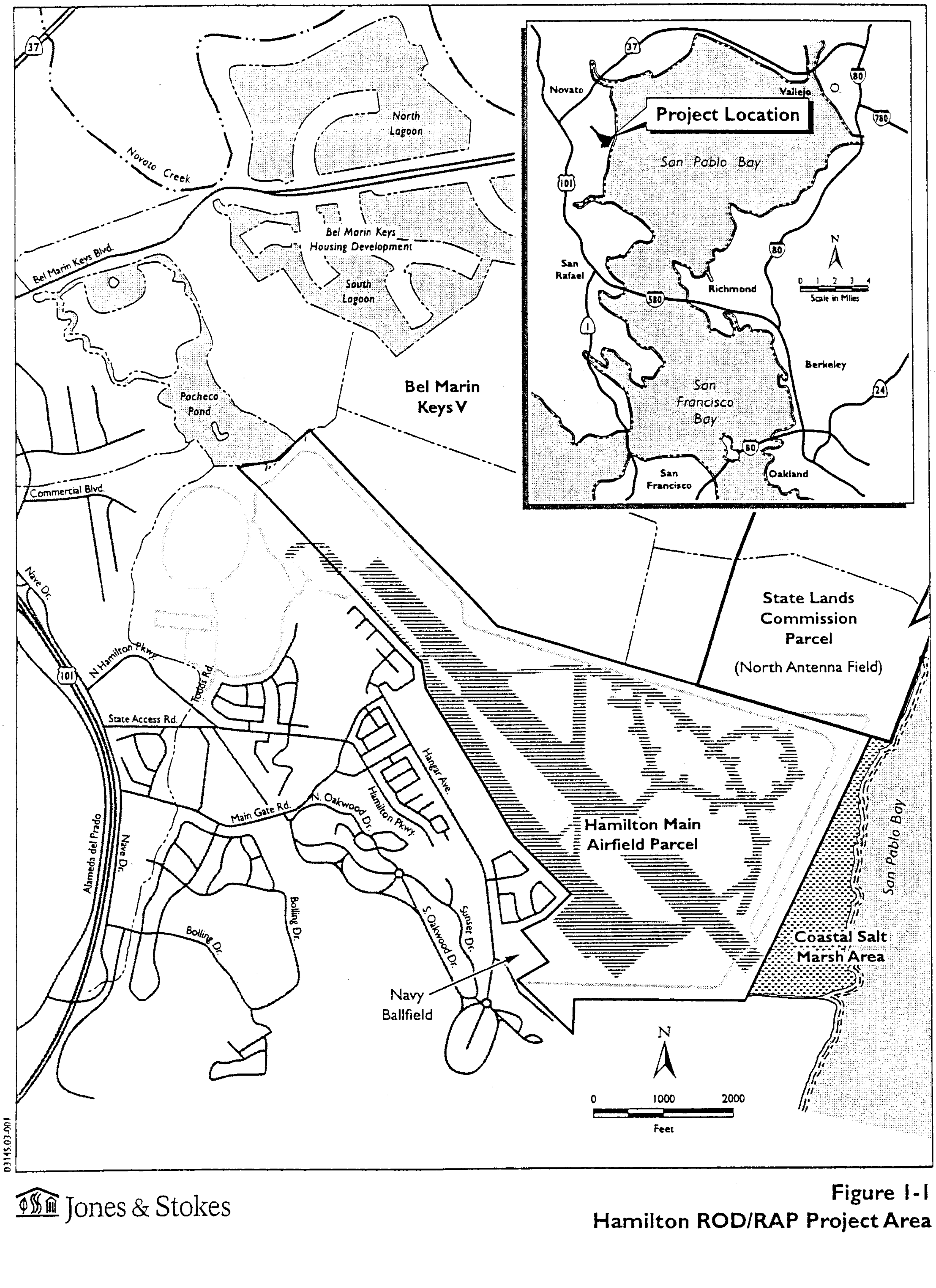

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Figure 1-1
Hamilton ROD/RAP Project Area

A conceptual plan for the HWRP is shown in Figure 1-2. The U.S. Army Corps of Engineers San Francisco District would construct the HWRP and would monitor and adaptively manage it for 13 years. The Conservancy, as the local sponsor, would be responsible for operation and maintenance of the HWRP from project completion forward. The Army anticipates transferring 630 acres of the 644-acre HAAF main airfield parcel to the Conservancy to become part of the HWRP. (The remaining 14 acres is located under the New Hamilton Partners' levee and this property would probably be transferred to the City of Novato.)

An EIS/EIR was completed for the HWRP in 1998, and the HWRP was authorized under the Water Resources Development Act of 1999. A supplemental EIS/EIR was completed in 2003 for wetland restoration on the BMKV portion of the HWRP. Ongoing investigations and interim removal actions have been conducted by the Army to make the property suitable for transfer and reuse. The ROD/RAP evaluated in this SEIR has been developed to identify the additional environmental actions necessary to protect public health and the environment based on the proposed future use of the property for wetland habitat.

The Navy ball fields parcel, located on the southwest corner of the Main Airfield Parcel (Figure 1-1), is included in the HWRP project area. However, this parcel is under Navy ownership and will be subject to a separate transfer process. With the exception of Spoils Pile N, any residual contamination issues on this parcel will be addressed by the Navy. Remediation of Spoils Pile N pursuant to the planned wetland use of the Navy ball fields parcel is addressed in the ROD/RAP.

Intent and Scope of the Document

Intent

CEQA requires state and local agencies to estimate and evaluate the environmental implications of their actions. It aims to prevent adverse environmental impacts of those actions by requiring agencies to avoid or reduce significant environmental impacts when feasible. CEQA requires that the lead agency prepare an EIR when the lead agency determines that a project may have a significant effect on the environment.

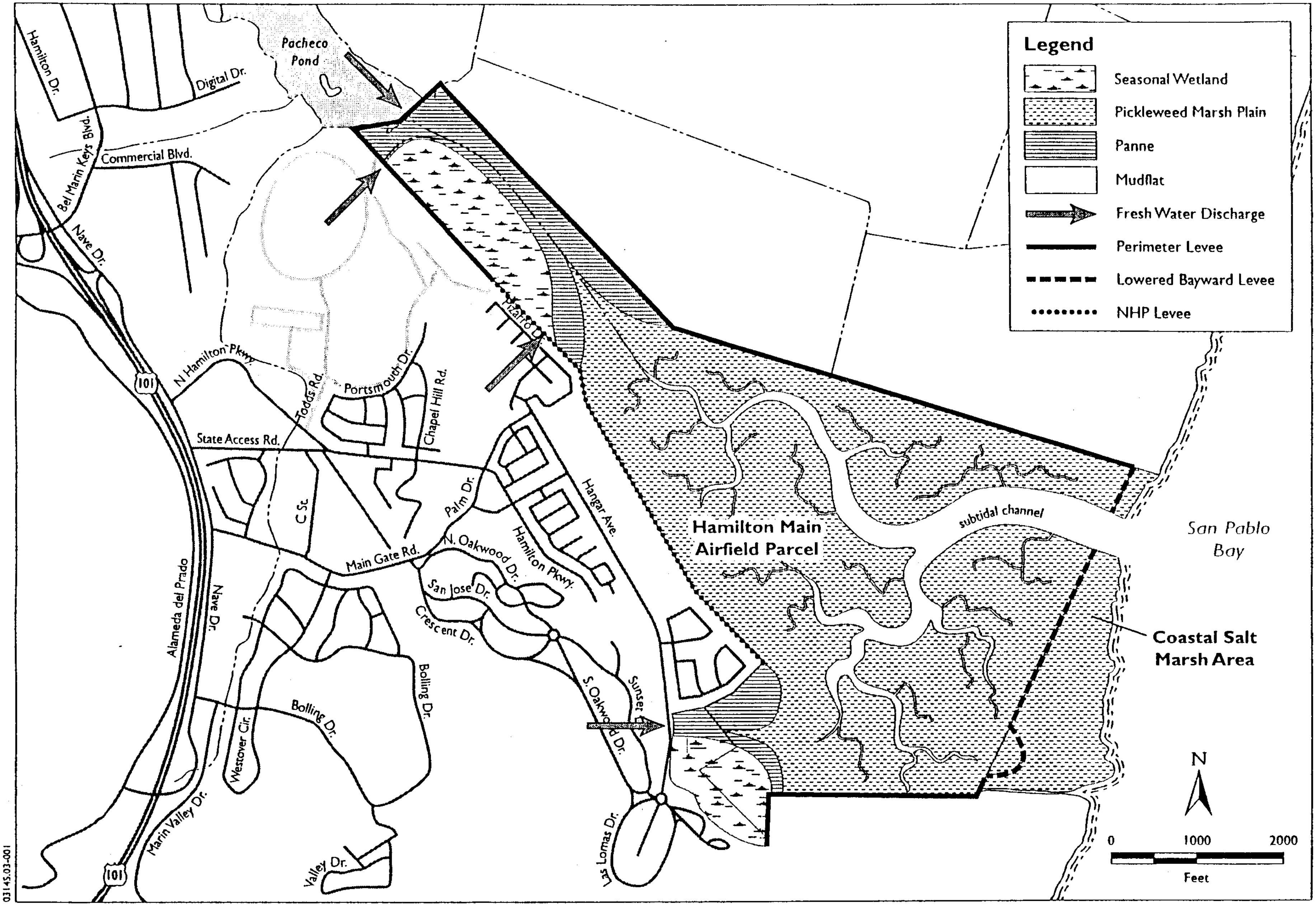

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Figure 1-2
Conceptual Restoration Plan – Hamilton Wetland Restoration Project

According to CEQA Guideline 15162, a subsequent EIR must be prepared if the agency with continuing discretionary authority over the project determines on the basis of substantial evidence in light of the whole record that

- substantial changes proposed in the project will require major revisions to the previous EIR because of the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects,
- substantial changes occur with respect to the circumstances under which the project is undertaken that will require major revision of a previous EIR because of the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects, or
- new information of substantial importance that was not known or could not have been known without exercise of reasonable diligence at the time the previous EIR was certified, shows the project may have a significant impact not addressed in the previous EIR.

When the 1998 EIS/EIR for the HWRP was prepared, details of remedial solutions for residual contamination on the site were unavailable. It was assumed in the HWRP EIR/EIS that any known contamination at the site would be remediated, pursuant to all regulatory controls and to cleanup standards that would support future use, before implementation of the wetland restoration project. Since completion of the HWRP EIR/EIS, hazardous materials contamination at the site has been further evaluated and remedial options have been developed. The activities described in the ROD/RAP constitute new information that was previously unknown and warrant preparation of a subsequent EIR. A subsequent EIR is subject to the same notice and public review requirements as the original EIR and must state where the previous document is available for review (State CEQA Guidelines Section 15162[c]).

DTSC and RWQCB approval of the ROD/RAP is considered a discretionary action subject to CEQA. The RWQCB will also be adopting site cleanup requirements (SCRs) for implementation of the ROD/RAP, which is a discretionary action subject to CEQA. Army approval of the ROD/RAP is a federal action that is not subject to CEQA.

This subsequent EIR is being prepared to comply with the requirements of CEQA with the intent to

- identify potential direct, indirect, and cumulative environmental impacts associated with implementation of the proposed RAP;
- describe mitigation measures intended to avoid potentially significant impacts or reduce them to a less-than-significant level; and
- disclose potential impacts and proposed mitigation measures for public review and comment.

Scope

This document is a subsequent EIR to the 1998 HWRP EIR/EIS (Conservancy 1998), which is incorporated by reference. The 1998 EIR/EIS evaluated impacts associated with the overall wetland restoration project. This subsequent EIR is being prepared to address potential impacts that may occur from the cleanup activities associated with residual contamination, pursuant to the larger wetland restoration project.

This subsequent EIR describes the proposed ROD/RAP, the No-Project Alternative, and other alternative remedial actions considered. As required by CEQA, the subsequent EIR evaluates the potential impacts of the ROD/RAP for the following resource topics:

- geology, soils, and seismicity;
- water resources;
- public health;
- biological resources;
- land use and public utilities;
- hazardous substances and waste;
- transportation;
- air quality;
- noise; and
- cultural resources.

The subsequent EIR also analyzes

- significant unavoidable impacts,
- significant irreversible changes in the environment,
- growth inducement,
- cumulative impacts, and
- alternatives to the proposed project.

Environmental Review Process

Public Involvement and Scoping

One of the purposes of CEQA is to establish opportunities for the public to review and comment on projects that may affect the environment. CEQA provides public participation through

- publication of the Notice of Preparation (NOP),
- project scoping,
- public review of environmental documents, and
- public hearing(s).

Notice of Preparation

The purpose of the NOP is to solicit participation from responsible and coordinating federal, state, and local agencies and from the public in determining the scope of an EIR. The scoping process was formally initiated for this subsequent EIR on April 11, 2003, by submitting the NOP to the California State Clearinghouse in compliance with CEQA. The NOP was also distributed to interested agencies, organizations, and members of the public.

Project Scoping

Scoping refers to the process used to determine the focus and content of an EIR. Scoping solicits input on the potential topics to be addressed in an EIR, the range of project alternatives, and possible mitigation measures. Scoping is also helpful in establishing methods of assessment and in selecting the environmental effects to be considered in detail. Tools used in scoping of this EIR included informal stakeholder and interagency consultation, a public scoping meeting, and publication of the project NOP.

A public scoping meeting was held on May 1, 2003, at the Marin Humane Society in Novato, California. The scoping meeting provided an opportunity for attendees to comment on environmental issues of concern and the alternatives that should be discussed in the EIR. One person attended the scoping meeting. Comments provided at the meeting addressed several questions relevant to the EIR, including why a subsequent EIR was being prepared and whether other land use alternatives were under consideration. Several questions regarding contamination, past sampling, and future monitoring of the site, which were applicable to the ROD/RAP, were also presented. No written comments were received during the scoping period.

Document Organization

Following this introduction, Chapter 2, "Description of Proposed Project," describes the proposed project in detail, including overall goals and objectives, site background, and the process of evaluation leading to selection of remedial strategies for each site. Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," discusses various resources affected by the proposed project. Chapter 4, " Alternatives" discusses alternatives to the proposed

ROD/RAP that were considered. Chapter 5, "Other Required CEQA Analyses," provides a discussion of cumulative impacts, growth-inducing impacts, and significant irreversible environmental changes. Chapter 6, "List of Preparers," provides a list of preparers and contributors of the EIR. Chapter 7 presents references cited.

Chapter 2

Description of Proposed Project

Project Location

The proposed project is located at the HAAF, a former military installation located adjacent to San Pablo Bay in the City of Novato, Marin County, California (Figure 2-1). The surrounding area is a combination of residential and commercial use with large, undeveloped open space, agriculture, and wetlands.

The HAAF main airfield parcel occupies approximately 644 acres, which includes the inboard area (the former airfield and eastern perimeter levee) and approximately 10 acres of coastal salt marsh east of the levee (Figure 2-2). An additional 78 acres of coastal salt marsh in the project area is owned by the SLC. The ROD/RAP addresses sites in both the inboard and coastal salt marsh areas, including coastal salt marsh lands owned by the SLC, and a site on the adjacent Navy ball fields parcel (Spoils Pile N).

Project Objectives and Goals

The objective of the HAAF Main Airfield Parcel ROD/RAP is to remove and/or cover contamination in the inboard area, rendering it suitable for open-space wetland restoration. For the coastal salt marsh, the objective is to remove contaminated soils to the maximum extent practical to protect public health and to maintain its wetland function. The ROD/RAP has been developed and would be implemented in support of the HWRP and its goal to create a diverse array of wetland and wildlife habitats at HAAF that benefits a number of endangered species as well as other migratory and resident species.

One of the key objectives of the HWRP is to recognize existing site opportunities and constraints, including the runway and remediation of contaminated areas, as integral components of design. Pursuant to this objective, the ROD/RAP proposes specific remedial action strategies at each site of known contamination in the main airfield and the coastal salt marsh that are fundamentally related to the establishment and long-term development of the wetland.

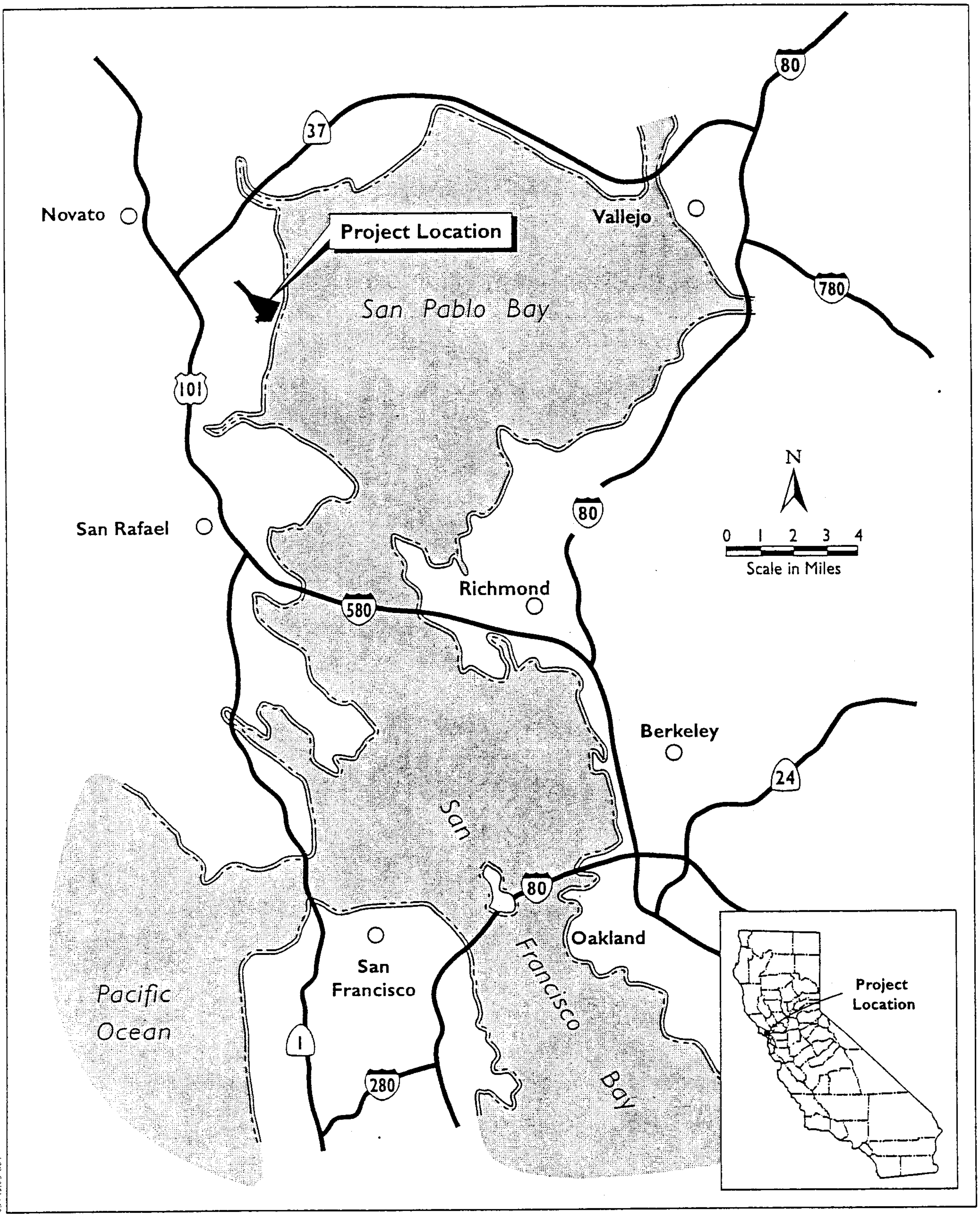

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Figure 2-1
Regional Location of the Hamilton Army Airfield Project

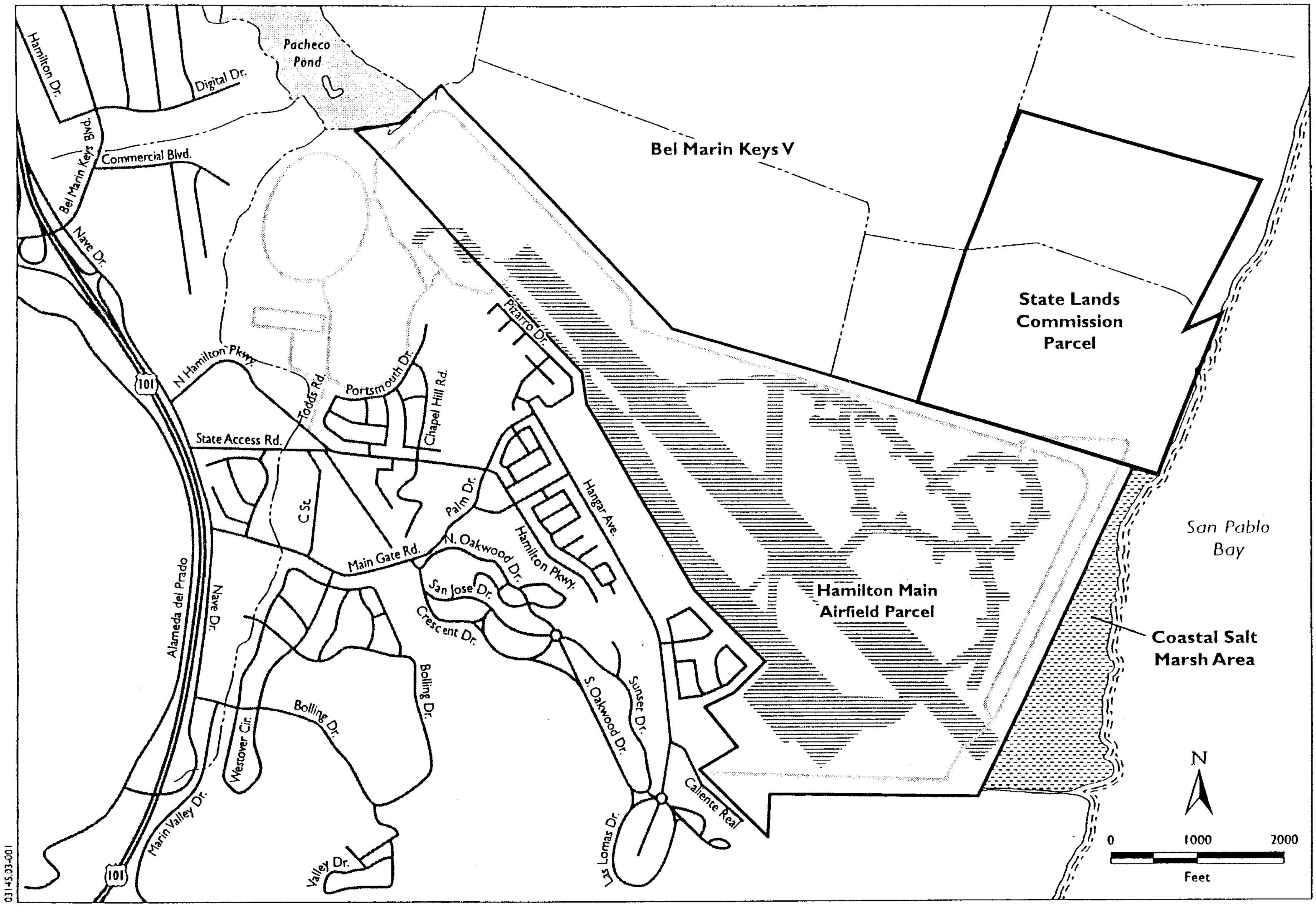

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Figure 2-2
Hamilton Main Airfield Parcel and Coastal Salt Marsh

The ROD/RAP defines target cleanup levels for contaminants that are protective of potential wetland receptors based on contaminant type, risk to human or ecological health, and the potential exposure pathways. Remedial actions are designed to ensure that target levels for all contaminants are achieved following remediation and during construction, establishment, and long-term development of the wetland.

The ROD/RAP has been developed with the ultimate view toward wetland restoration on the site pursuant to the HWRP and also directly or indirectly supports other objectives of the HWRP. Those objectives include

- to design and engineer a restoration project that stresses simplicity and has little need for active management;
- to demonstrate beneficial reuse of dredged material, if feasible;
- to ensure no net loss of wetland habitat functions presently provided at the HAAF site;
- to create and maintain wetland habitats that sustain viable wildlife populations, particularly for Bay Area special-status species;
- to include buffer areas along the upland perimeter of the project area, particularly adjacent to residential areas, so that wildlife will not be impacted by adjacent land uses—perimeter buffer areas should also function for upland refuge, foraging, and corridors for some species;
- to be compatible with adjacent land uses and wildlife habitats; and
- to provide for public access that is compatible with protection of resource values and regional and local public access policies.

Proposed HAAF Main Airfield Parcel ROD/RAP

Introduction

The proposed HAAF Main Airfield Parcel ROD/RAP documents the selected environmental response actions to be taken to address potential risks associated with residual contaminants on the main airfield parcel and the adjacent coastal salt marsh, and restoration of a wetland at HAAF. The ROD/RAP summarizes the following:

1. Lists those sites that have been investigated during the remedial investigation and those that require further investigation.
2. Establishes target cleanup levels (action goals) for all contaminants on the property based on an assessment of the human and ecological risk for each contaminant during construction and maturation of the wetland.
3. Identifies the goals (Remedial Action Objectives [RAOs]) that each remedial action is intended to achieve in terms of protecting human health and the

environment by removing or reducing residual contaminants to their respective action goals or eliminating exposure to contaminants.

4. Describes the selected response actions (remedial strategies) for each site in order to achieve the RAOs.

The ROD/RAP has been developed by the United States Department of the Army, RWQCB, and DTSC.

The Army is responsible for environmental remediation of the main airfield parcel at HAAF because the Department of Army was the owner of the property at the time of closure under BRAC. The term "environmental actions" in the ROD/RAP relates to two types of actions:

- response actions by the Army BRAC program, and
- environmental assurance actions by the Army Civil Works Program as part of the HWRP.

The Army BRAC program would perform environmental response actions to benefit the future land use plans for wetland restoration. The Army Civil Works Program, through the HWRP, would take actions to address the potential risks posed by dichlorodiphenyltrichloroethane (DDT) throughout the inboard area, and polynuclear aromatic hydrocarbons (PAHs) in soils adjacent to the runway.

The State (DTSC and the RWQCB) is regulating these environmental actions as environmental response actions in accordance with the provisions of California Health and Safety Code. The RWQCB, with DTSC support, would be the lead state agency for oversight of the implementation of the ROD/RAP. The RWQCB, as authorized by the Porter Cologne Water Quality Control Act, would adopt site cleanup requirements (SCRs) that would ensure implementation of the final approved ROD/RAP. Through the SCRs, the State would ensure that environmental assurance actions are taken.

Previous Investigations and Nature of Contamination on the Site

The ROD/RAP relies on a number of previous investigations and reports prepared for the main airfield parcel and coastal salt marsh areas between 1985 and 2002, including the Human Health and Ecological Risk Assessment (U.S. Army Corps of Engineers 2001), Remedial Design Investigation Final Data Report (FW 2000), Comprehensive Remedial Investigation (IT 1999a), and several interim removal action and sampling reports.

A focused feasibility study was prepared by the Army in 2001for the inboard area (CH2M Hill 2001) and in 2003 for the coastal salt marsh area (CH2M Hill 2003), referred to collectively as the focused feasibility study (FFS). The FFS evaluated sites that require further action and developed, evaluated, and recommended alternatives for these sites to protect human health and the environment in the future wetland restoration.

The FFS considered remediation strategies consistent with the planned use of the site for wetland restoration. Specific aspects of the HWRP, such as proposed habitat type, channel excavation, and the potential for channel erosion (scour), were also considered in identifying, evaluating, and selecting remedial alternatives for the contamination sites. The ROD/RAP was prepared in conjunction with the FFSs for the inboard and coastal salt marsh areas to document the preferred remedies for each site. Army BRAC sites were not evaluated further in the ROD/RAP where it was previously determined in the FFS that no action was required or where no contaminants of concern were identified.

In 2001, the U.S. Army Corps of Engineers prepared an Archive Search Report (ASR) to document subsequent investigations to identify contamination issues that were not identified through previous investigations (U.S. Army Corps of Engineers 2001). A memorandum of record was prepared in 2003 to provide supplemental information to the ASR document (U.S. Army BRAC Office 2003). Through interviews with individuals and a review of archival materials, the ASR identified 19 sites of possible contamination. Many of the sites identified in the ASR were determined to be sites already known to the Army and previously investigated by the Army BRAC environmental restoration program. Further investigation is required for four of the sites identified in the ASR. These sites are included in the scope of the ROD/RAP.

The main airfield parcel was used for a variety of military functions. These functions were supported by underground storage tanks (USTs), aboveground storage tanks (ASTs), transformers and transformer pads, storm drain and sanitary sewer systems, the former sewage treatment plant (FSTP) (including sludge drying beds), fuel lines, revetment areas, and the perimeter drainage ditch (PDD), which collected runoff from the Base, as well as from some surrounding agricultural lands.

Portions of the coastal salt marsh were used to support Department of Defense operations on the main airfield. Activities within the coastal salt marsh included emergency rescue operations in San Pablo Bay and disposal of construction debris. Transformers and transformer pads, a winch at the boat dock, and a burn pit at the east levee construction debris disposal area are within the coastal salt marsh area. Additional features of the coastal salt marsh include the outfall drainage ditch (ODD), which receives stormwater runoff and drainage from the main airfield, and the FSTP outfall, which received main airfield sanitary and industrial wastes from the FSTP.

Based on historical investigations and removal actions to date, the types of contaminants detected at various sites within the HAAF main airfield parcel and adjacent coastal salt marsh include

- total petroleum hydrocarbons (TPHs), TPH-diesel, TPH-gasoline, jet fuel, or TPH-motor oil;
- metals;
- dioxins;
- volatile organic compounds (VOCs) such as benzene, ethylbenzene, toluene, and xylenes;
- semivolatile organic compounds including PAHs;
- polychlorinated biphenyls (PCBs); and
- pesticides/herbicides, including DDT.

Sites Considered in the ROD/RAP

Sites and issues evaluated in the ROD/RAP are summarized below. Inboard sites are shown on Figure 2-3, coastal salt marsh sites area shown on Figure 2-4, and DDT and PAH areas are shown on Figure 2-5. Contaminants of concern at each site are presented in Tables 2-1 and 2-2. A detailed account of these sites, including historical uses, previous investigations, identified contaminants, and prior remedial actions, is provided in the ROD/RAP. As described previously, sites evaluated in the ROD/RAP are divided between those where actions are to be implemented by the BRAC program and actions are to be implemented by the Army Civil Works program as part of the HWRP. The ROD/RAP also addresses several issues that would be addressed by the BRAC program. These issues are referred to as "other BRAC environmental considerations."

As noted in Chapter 1, the Navy ball fields parcel is under Navy ownership and will be subject to a separate transfer process. With the exception of Spoils Pile N, any residual contamination issues on this parcel would be addressed by the Navy.

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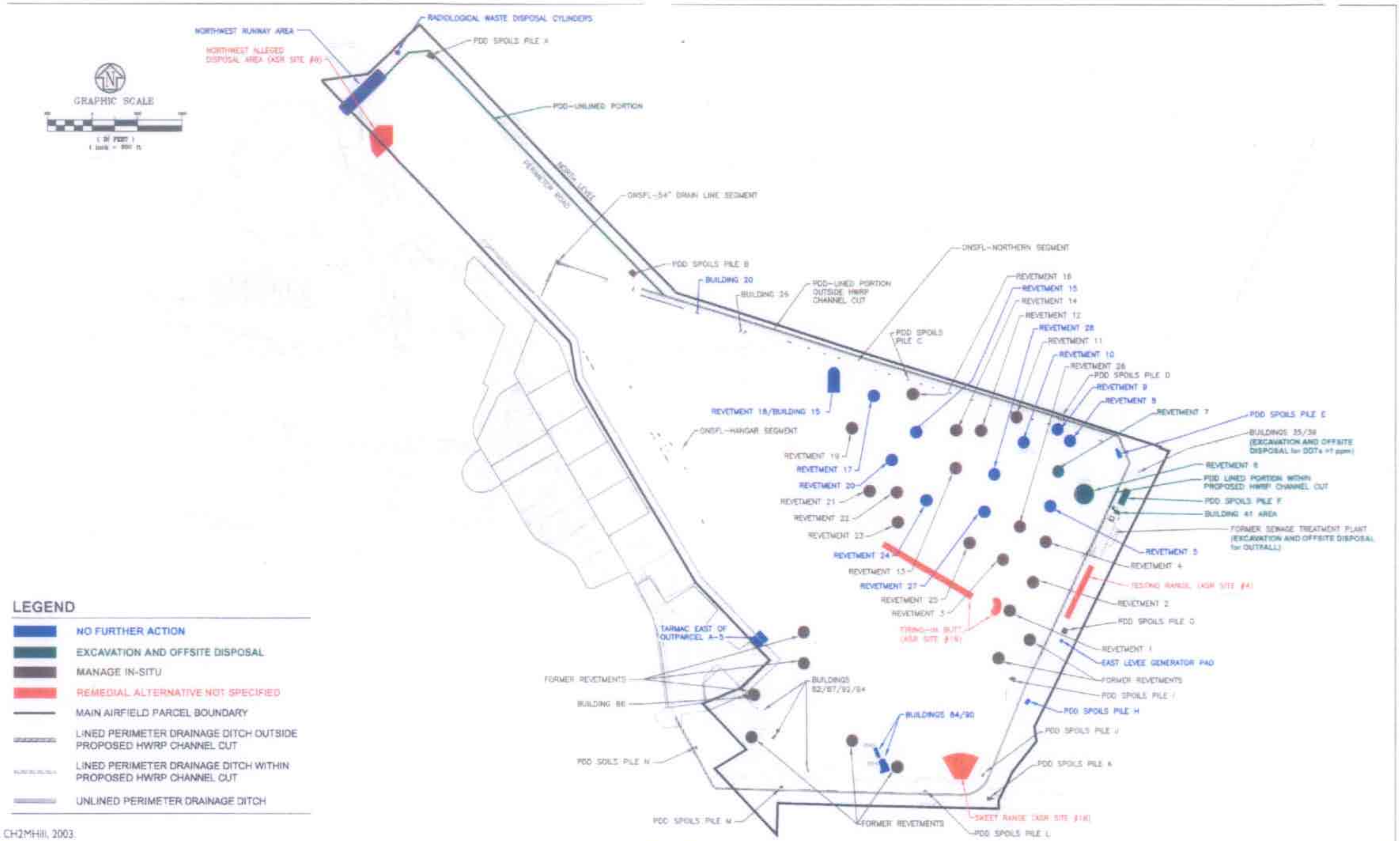

LEGEND

	NO FURTHER ACTION
	EXCAVATION AND OFFSITE DISPOSAL
	MANAGE IN-SITU
	REMEDIAL ALTERNATIVE NOT SPECIFIED
	MAIN AIRFIELD PARCEL BOUNDARY
	LINED PERIMETER DRAINAGE DITCH OUTSIDE PROPOSED HWRP CHANNEL CUT
	LINED PERIMETER DRAINAGE DITCH WITHIN PROPOSED HWRP CHANNEL CUT
	UNLINED PERIMETER DRAINAGE DITCH

Source: CH2MHill, 2003.

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Figure 2-3
Inboard Area Site Locations

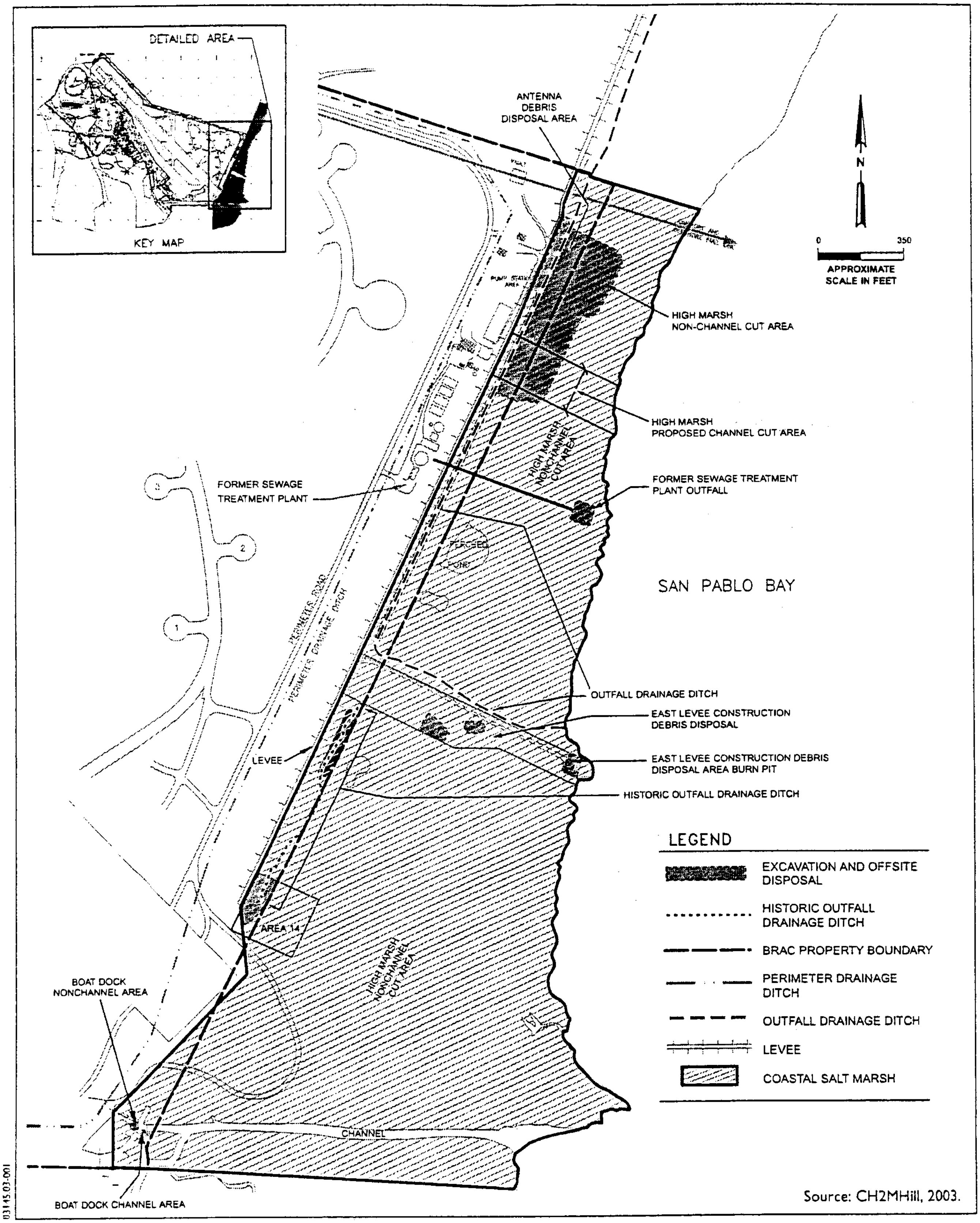

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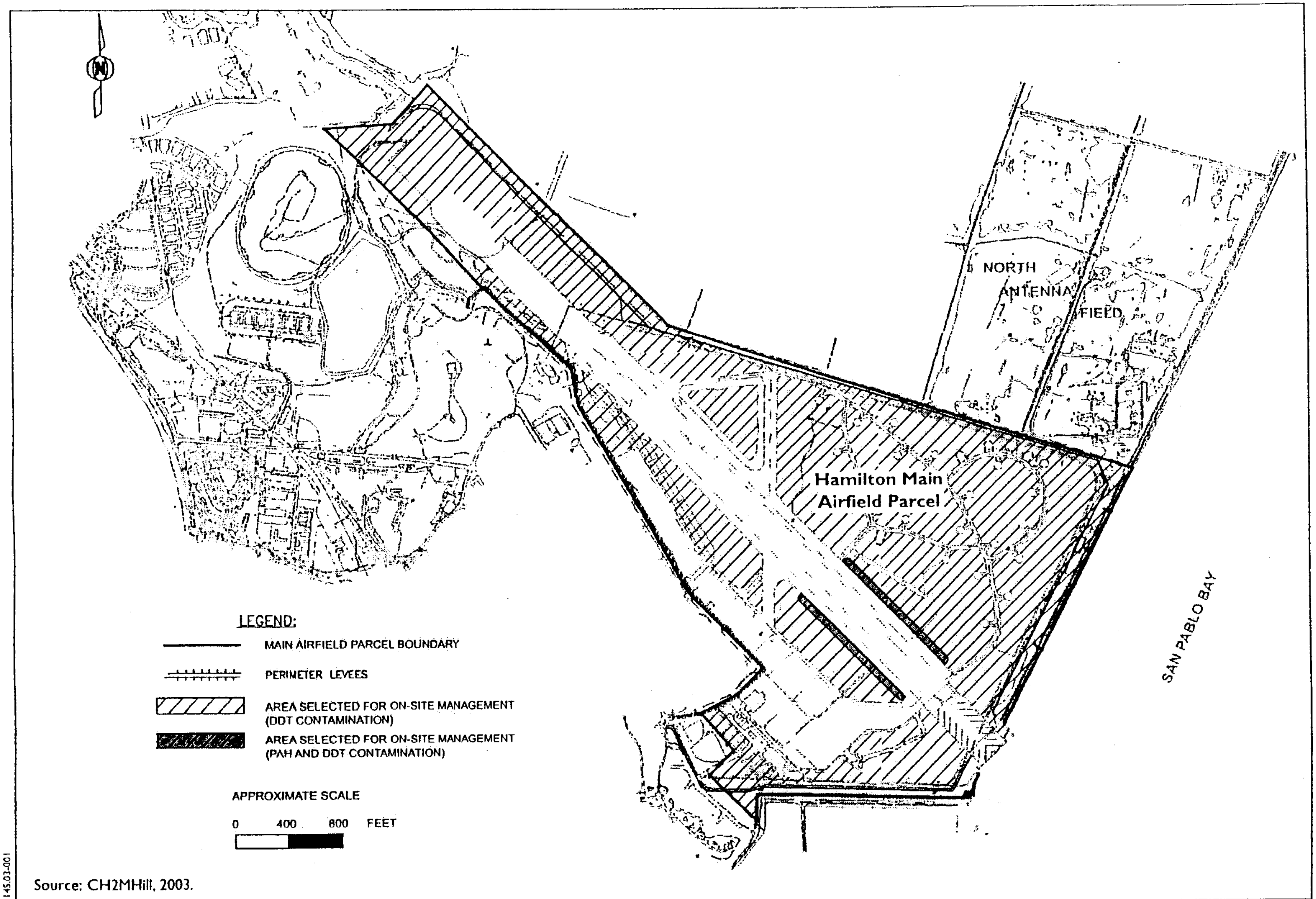
Figure 2-4
Proposed Remediation Areas – Coastal Salt Marsh Sites



Source: CH2MHill, 2003.

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Figure 2-5
Proposed Remedial Area for DDTs and PAHs

Table 2-1. Summary of Remedial Strategies and Contaminants of Concern for Inboard Sites

Site	Contaminants and Inboard Action Goals (ppm)																						
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
No Further Action																						
Revetment 18/Bldg. 15																						
Building 20																						
Building 84/90 Area																						
PDD Spoils Pile E																						
PDD Spoils Pile H																						
East Levee Generator Pad																						
NW Runway Area										X	X											
Tarmac East of Outparcel A-5																						
Radiological Waste Disposal Cylinders																						
Revetment 5																						
Revetment 8																						
Revetment 9																						
Revetment 10																						
Revetment 15												X										
Revetment 17																						
Revetment 20												X										
Revetment 24																						
Revetment 27																						
Revetment 28																						

Site	Contaminants and Inboard Action Goals (ppm)																					
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
Excavation and Off-site Disposal																						
Building 35/39 Area					X	X																
Building 41 Area	X				X																	
Perimeter Drainage Ditch (PDD) unlined						X	X			X												
PDD lined (proposed wetland channel)							X			X												
PDD Spoils Pile F					X		X	X		X				X		X	X		X			X
Revetment 6		X																				
Revetment 7							X					X				X						
In-Situ Management*																						
Former Sewage Treatment Plant					X																	
Building 26	X																					
Building 35/39 Area					X																	
Building 82/87/92/ 94 Area									X	X												
Building 86							X			X		X	X									
PDD lined (outside wetland channel)							X			X												
PDD Spoils Pile A					X					X												X
PDD Spoils Pile B												X			X			X		X		X
PDD Spoils Pile C					X																	
PDD Spoils Pile D					X																	
PDD Spoils Pile G					X																	
PDD Spoils Pile I					X					X												
PDD Spoils Pile J					X																	
PDD Spoils Pile K					X																	
PDD Spoils Pile L									X					X		X						X
PDD Spoils Pile M					X																	
PDD Spoils Pile N					X											X						
Onshore Fuel Line (ONSFL)		X																				

Site	Contaminants and Inboard Action Goals (ppm)																					
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
ONSFL – Hangar Segment		X	X				X															
ONSFL – Northern Segment	X	X		X																		
Revetment 1							X		X			X				X						
Revetment 2												X				X						
Revetment 3									X						X		X					
Revetment 4												X				X						
Revetment 11															X							
Revetment 12															X							
Revetment 13							X					X				X						
Revetment 14	X																					
Revetment 16									X													
Revetment 19	X	X					X		X			X			X	X						
Revetment 21	X	X													X						X	
Revetment 22	X	X																				
Revetment 23															X							
Revetment 25	X								X													
Revetment 26	X	X							X		X						X					
On-site Management**																						
Inboard Area-wide DDTs; PAHs in soils adjacent to runway					X		X															
Lead-Based Paint																X						
Remedial Approach to be Determined***																						
Testing Range (ASR Site #4)																						
Alleged Hazardous, Toxic, and Radiological Waste Disposal Site (ASR Site #8)																						
Skeet Range (ASR Site #18)																						

Site	Contaminants and Inboard Action Goals (ppm)																					
	TPH – Diesel - 144	TPH – Gasoline - 12	TPH – JP-4 - 12	TPH – Motor Oil - 144	DDT – 0.03	DDT 1.0	PAH – 4.022	Arsenic – 16.7	Barium - 190	Beryllium – 1.03	Boron – 36.9	Cadmium – 1.2	Chromium - 112	Cobalt – 27.6	Copper – 68.1	Lead – 46.7	Manganese - 943	Mercury – 0.43	Nickel - 114	Silver – 1.0	Vanadium - 118	Zinc - 158
Firing-In-Butt (ASR Site #19)																						
GSA & BRAC Soil Stockpiles																						

*With monitoring and maintenance for Army BRAC Sites.

**With monitoring and maintenance for Army Civil Works Program.

*** If cleanup is determined to be necessary based on further investigations, cleanup would be conducted in accordance with the goals and objectives of the ROD/RAP. For purposes of analysis in this SEIR it is assumed that all ASR sites and approximately 10 percent of the GSA/BRAC soil stockpiles would be excavated and disposed of off site.

Table 2-2. Summary of Remedial Strategies and Contaminants of Concern for Coastal Salt Marsh Sites

Site	Contaminants and Coastal Salt Marsh Action Goals (ppm)																												
	Diesel Range Hydrocarbons	Endrin aldehyde – 0.0064	Heptachlor – 0.0088	Heptachlor epoxide – 0.0088	Total Dioxin Equivalents – 0.000021	BHC – 0.0048	DDT – 0.03	DDT 1.0	Dichlorprop – 0.14	MCPA – 7.9	MCPP – 3.0	Methoxychlor – 0.09	Motor Oil	PAH – 4.022	PCB – 0.09	Pentachlorophenol – 0.017	Phenol – 0.13	Chlordanes – 0.00479	Barium - 188	Beryllium – 1.68	Cadmium – 1.8	Cobalt – 26.7	Copper – 88.7	Lead – 46.7	Manganese - 1260	Mercury – 0.58	Nickel - 132	Silver – 1.0	Zinc - 169
Excavation and Off-site Disposal																													
Antenna Debris Disposal Area	X	X	X	X		X	X			X	X		X		X			X	X	X	X	X	X	X	X		X	X	X
East Levee Construction Debris Disposal Area	X				X		X								X									X					X
High Marsh Area																													
• Non-channel Cut Area		X					X								X			X		X		X	X	X	X		X	X	X
• Proposed Channel Cut		X					X						X					X		X	X	X		X			X		
Historic Outfall Drainage Ditch									X												X	X		X	X		X		X
Outfall Drainage Ditch	X	X					X						X		X	X	X	X		X	X	X		X	X		X	X	X
Boat Dock																													
• Non-channel Area				X		X	X					X		X				X						X					X
• Channel Area																			X				X	X					X
Area 14							X						X	X								X							
Former Sewage Treatment Plant Outfall and Pipe							X											X					X	X		X		X	X

Army BRAC Sites

Former Sewage Treatment Plant (FSTP)

The FSTP was located at the eastern edge of the inboard area, close to Perimeter Road and the PDD, and immediately southwest of the pump station area. The FSTP consisted of several buildings, a digester, and four unlined sludge-drying beds. This site also includes storm drains associated with the FSTP.

Building 20

Building 20, on the northern Perimeter Road, was used to produce electricity for runway lighting, radar, or other activities. One transformer pad is adjacent to the east wall, and one diesel UST was buried on the southwest side of the building. The transformers have been removed (IT 1999a).

Building 26

Building 26 is located along the northern Perimeter Road, approximately 500 feet southeast of Building 20. A transformer pad is located on the west side of the building; the transformers have been removed (IT 1999). One diesel UST was formerly located on the south side of the transformer pad, and a former AST was located inside the building. The UST excavation was backfilled.

Building 35/39 Area

The Building 35/39 Area is located near the northeast corner of the inboard area. Both buildings contain high-capacity pumps for the removal of water from the main airfield parcel. Three active transformers are located midway between the two buildings, and outfall pipes are located at each building to discharge water from the pumps through the levee into the ODD (IT 1999a).

Building 41 Area

Building 41 was a pump station in the southern portion of the pump station area. Two 1,100-gallon diesel USTs formerly located on the northwestern side of Building 41 supplied fuel for the pumps at the building. Structures in and around Building 41 have been removed. Features at the site included four inoperable diesel-powered pumps inside Building 41 and two former ASTs east of the structure. One outfall pipe extended 80 feet southeast from Building 41, through the levee to a discharge point in the ODD in the coastal salt marsh (CH2M Hill 2001).

Building 82

Building 82 is a single-story structure located south of former Building 86 and approximately 50 feet from Perimeter Road. Building 82 was used for flight operations (IT 1999), aircraft rescue, and first aid (CH2M Hill 2001). Currently, Building 82 is used by the Marin County Sheriff's Department for storage of training and safety equipment and by the Army for its HAAF BRAC office. This site also includes storm drains associated with Building 82.

Building 87

Building 87, located immediately south of the aircraft parking lot, was used to store products such as paint, oil and grease, antifreeze, and solvents in containers of 5 gallons or less. Numerous 55-gallon drums of solvent and cleaning compounds were stored on horizontal dispensing racks in the area around Building 87. One metal CONEX container, located northwest of Building 87, contained unleaded gasoline in 5-gallon containers. The racks and drums were occasionally moved to various locations surrounding the building (IT 1999a). This site also includes storm drains associated with Building 87.

Building 92/94 Area

Buildings 92 and 94 are single-story structures located north of Building 82 and west of former Building 86. The buildings were used for aircraft maintenance and storage (IT 1999a) and to store supplies for aircraft rescue and offices (CH2M Hill 2001). They are currently used to store records and sampling equipment. This site also includes storm drains associated with the Building 92/94 area.

Building 84/90 Area

The Building 84/90 Area is at the southeastern end of the former Aircraft Maintenance and Storage Facility, northwest of Perimeter Road and south of the taxiways. Building 84 was used for repair of aircraft electronics equipment (IT 1999a). A fenced enclosure just northeast of Building 84 formerly contained a concrete slab and three transformers. The transformers were removed in 1995 (IT 1999a). Three electrical units of unknown use are located on the northern exterior wall beneath an awning.

Building 86

Building 86 was an aircraft maintenance hangar located about 50 feet southeast of the New Hamilton Partners levee. A flammable materials locker and at least one recirculating solvent parts cleaner were located in Building 86. This site also includes storm drains associated with Building 86.

Perimeter Drainage Ditch (PDD)

The PDD is a drainage channel constructed to convey surface water runoff to pump stations for lifting and discharge into the ODD and San Pablo Bay. The PDD also conveys water from portions of the General Services Administration properties, from privately owned agricultural lands adjoining the airfield, and overflow from Ignacio Reservoir. There is an additional open drainage ditch at the base of Reservoir Hill in the General Services Administration Phase I Sale Area that connects to the north end of the PDD by an underground storm drain pipe (IT 1999a).

PDD Spoils Piles

Since the 1930s, the PDD was periodically dredged to remove vegetation and sediment. During the 1990s, dredged material was placed in 14 separate locations, later designated Spoils Piles A through N. The spoils piles were identified based on review of aerial photographs and field reconnaissance (ETC 1994).

East Levee Generator Pad

The East Levee Generator Pad is located midway between the FSTP and the southern end of the runway. One transformer pad and one generator pad were formerly adjacent to each other at a former AST site.

Onshore Fuel Line Sites

From about 1945 until 1975, the onshore fuel line, which extended from the booster pump station to the airfield hangars, was used to transport aviation gasoline and, later, liquid jet fuels from the offshore fuel system to several locations around the airfield.

Northwest Runway Area

The Northwest Runway Area is located at the extreme northern end of the main airfield parcel, along the southeastern slope of the northern perimeter levee, between Ignacio Reservoir Marsh and an alkali marsh. This site was originally identified as an area of potential concern through an aerial photograph review, which showed possible surface disturbances.

Tarmac East of Outparcel A-5

The tarmac east of Outparcel A-5 is a taxiway connecting the former Aircraft Maintenance and Storage Facility with the northwestern portion of the runway. The tarmac is located northwest of former Building 86 and adjoins and includes a portion of the New Hamilton Partners' levee constructed at the boundary between the General Services Administration and BRAC properties.

Revetment Area

The revetment area located east of the runway is transected by asphalt-paved taxiways that connect 28 circular parking areas (revetment turnouts) and extensive undeveloped areas. The revetments were used for aircraft staging and refueling before 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area, respectively (IT 1999a). This site also includes storm drains associated with the Revetments. Eight additional historic revetments were identified in ASR and are addressed in the ROD/RAP.

Other Army BRAC Environmental Concerns

Testing Range (ASR Site #4)

The ASR identified an area labeled as the "Testing Area" based on an aerial photograph dated August 1946. The area is described as a "rectangle approximately 1,000 feet by 100 feet between the sewage treatment plant and the black powder magazine." The ASR did not explain the basis for labeling the area as a testing area. However, based on a survey of additional maps, the Army BRAC office concluded that the testing range may have been a small-arms target practice area.

Alleged Hazardous, Toxic, and Radiological Waste Disposal Site (ASR Site #8)

In December 2000, a local resident and former military facility inspector stated that during a routine inspection of Hamilton in the mid-1980s, he was told various chemicals were improperly disposed of in an area near the north end of the runway (the alleged HTRW Disposal site). Previous sampling in the area included the collection and analysis of three samples within the area in question.

Skeet Range (ASR Site #18)

A skeet range was identified in the ASR, situated at the corner where South Boundary Road meets East Boundary Road and west of what is now the south runway extension. It is visible on aerial photography dating up to April 26, 1943, but is not observable in photographs beginning in 1946.

Firing-In-Butt (ASR Site #19)

A firing-in-butt was identified in the ASR near the runway and Revetment 25. There were three hardstands and a "butt," which is a target surrounded by barricade material. Aircraft machine guns on both sides of the aircraft were fired into the earthen mound or "butt" to check firing alignment. The butt was entirely removed in 1947; the disposition of the soil is not known. (The ASR incorrectly shows the butt as being closer to the firing line than photos indicate and incorrectly states the date of its removal.) The hardstands with connecting road still exist and are visible in 1960s aerial imagery. The site is considered to be a negligible explosives safety risk and no explosive-related action is necessary.

General Services Administration and BRAC Soil Stockpiles

Approximately 97 soil stockpiles containing 107,000 cubic yards of soil are currently staged in rows on the runway. The soil was generated by the environmental remediation of General Services Administration and BRAC properties adjacent to the main airfield parcel. Soil with concentrations above hazardous waste thresholds (lead, PCB, VOCs, pesticides, or herbicides) were not stockpiled on the runway and were transported off-site for disposal.

Radiological Waste Disposal Cylinders

According to the *BRAC Historical Record Search to Identify any Residual Radioactive Material at Hamilton Army Airfield* by the Medical Physics Center (1994), two concrete-capped galvanized cylinders were buried, in accordance with Atomic Energy Commission policy, at Hamilton near an earthen levee in 1963. With the assistance of the U.S. Air Force, the cylinders, confirmed to contain electron tubes and wave-guides, were located northeast of the runway overrun levee. The cylinders were taken off-site on September 14, 1988, and disposed of at a low-level radiological disposal facility in Barnwell, South Carolina. The California Department of Health Services reviewed documentation of the radiological history of HAAF. The Department of Health Services concluded that the cylinders had been removed from the base and that no contamination had occurred.

Hamilton Wetland Restoration Program Environmental Issues

Residual DDTs throughout the Main Airfield Parcel and PAHs Near the Runway

In 1999, the Army conducted a study to evaluate the potential for the presence of pesticides throughout the unpaved areas of the main airfield parcel and the potential for PAHs to be located adjacent to the runway. This study and the results of the study are documented in the *Remedial Design Investigation Final Data Report* (FW 2000). During the study, the Army collected 23 samples throughout the main airfield parcel and near the runway to evaluate the presence or absence of pesticides and DDTs. The study showed that approximately 270 acres of grassland have residual concentrations of DDTs. The U.S. Army Corps of Engineers is currently carrying out an additional sampling plan for DDTs on the main airfield parcel but the results are not yet available.

Lead-Based Paint

Given the age of existing and previously demolished buildings in the inboard area, lead-based paint is likely to have been used on the buildings.

Action Goals of the ROD/RAP

Environmental action contaminant concentration goals (action goals) protective of wetland receptors are established in the ROD/RAP (see Tables 2-1 and 2-2). The action goals are based primarily on site-specific ambient concentrations in combination with RWQCB-developed numbers for San Francisco Bay ambient sediments and National Oceanic and Atmospheric Administration effects-range low sediment concentrations. A more detailed discussion of action goals is provided in Section 3.6, "Hazardous Substances and Waste" and in the ROD/RAP.

Remedial Action Objectives of the ROD/RAP

The ROD/RAP contains RAOs that describe the goals of the proposed remedial actions. RAOs are developed to evaluate the ability of the remedial alternatives to protect human health and the environment. RAOs are quantitative and qualitative expressions of goals for protecting human health and the environment that are expressed in terms of contaminants and media of interest, possible receptors, and associated exposure pathways (CH2M Hill 2001). RAOs can differ with each specific site, depending on site conditions, exposure scenarios, and receptors. Specific RAOs were used to guide the development of alternatives for each site.

The RAOs in the ROD/RAP for the Army BRAC sites and the "other Army BRAC environmental concerns," are to prevent or mitigate the exposure of ecological and human receptors to soil and/or sediment containing concentrations of site-specific contaminants that are greater than their respective action goals by

- reducing the concentrations of residual contaminants, or
- controlling or eliminating the exposure of receptors to residual contaminants.

The RAOs for the HWRP issues are to prevent or mitigate the exposure of ecological and human receptors to soil containing concentrations of contaminants that are greater than their respective action goals for these issues.

A more detailed discussion of remedial action objectives is provided in Section 3.6, "Hazardous Substances and Waste" and in the ROD/RAP.

Remedial Strategies in the ROD/RAP

Remedial Strategies Evaluated in the ROD/RAP for Army BRAC Sites and HWRP Environmental Issues

Remedial strategies were developed by assembling remedial technologies compatible with a wetland end-use scenario into treatment options that met the RAOs. The ROD/RAP evaluated four primary remedial strategies to address contamination issues on the site. Different combinations of the four strategies were considered for the Army BRAC sites and for the HWRP sites. The remedial strategies evaluated for each category of site are shown below, followed by a detailed discussion of the four strategies and a description of the decision criteria for selecting final remedial strategies for each site.

For the Army BRAC sites, the ROD/RAP evaluated three remedial strategies:

- No Further Action,
- Excavation and Offsite Disposal, and
- Manage in-Situ, with Monitoring and Maintenance, for Army BRAC Sites.

For the HWRP issues, the ROD/RAP evaluated two remedial strategies:

- No Further Action, and
- Manage on Site, with Monitoring and Maintenance, for Army Civil Works Issues.

The ROD/RAP also addresses lead-based paint (LBP) in soils at current and former building locations. Rather than evaluating different remedial strategies for LBP, the ROD/RAP proposes that soils containing LBP be managed on-site as part of the HWRP.

These strategies are discussed further below.

No Further Action

Under this strategy, the ROD/RAP identifies that no further environmental action would be necessary or taken, and there would be no restrictions placed on the use of the site.

Excavation and Off-Site Disposal

Under this strategy, contaminated soils above action goals would be excavated and disposed of at an appropriate off-site landfill facility. Excavated sites that are shown to meet the action goals shall be considered fully remediated and there would be no institutional controls placed on the use of the site. For coastal salt marsh sites, excavation would continue until the action goals have been achieved, or until it is determined by joint agreement of the State and Army that further excavation is impractical or it is determined that the remaining contamination does not pose an unacceptable risk to human health and the environment.

Manage In-Situ, with Monitoring and Maintenance, for Army BRAC Sites

Under this strategy, soils with residual concentrations of contaminants above the established action goals would remain in place and a performance criterion of 3 feet of stable cover, or equivalent, would be established. This performance criterion is established to eliminate or significantly reduce any potential risk associated with residual concentrations of contaminants by preventing exposure of future wetland receptors to contaminated site soils. The stable cover criterion shall be maintained throughout the life of the wetland. The in-situ strategy was considered for sites being addressed by the Army BRAC program and was not considered for DDT or PAH issues addressed by the HWRP program.

The HWRP design and geomorphic and scour analyses would be used to determine whether performance criterion can be achieved. If affected soils remain in areas of the wetland restoration project that are subject to tidal scour so that the performance criteria cannot be achieved, then such affected soils shall be excavated and disposed of offsite. For sites where the in-situ management strategy is selected, the Army shall ensure that the HWRP, including implementation of its plan for monitoring and adaptive management, would achieve and maintain the 3 feet of stable cover. The duration of the HWRP obligation shall extend to a date 13 years following the date of levee breach and reintroduction of tidal influence to the Inboard Area. This duration is the limit of the authorized implementation period of the HWRP, in accordance with federal law. Throughout the period of implementation of the HWRP and after, the Army and the property owner shall ensure that the remedy for these sites is maintained to the extent necessary to protect human health and the environment.

Institutional controls in the form of land use restrictions, would also be required where contamination remains at levels above the action goals. Institutional controls are described further below.

Manage On-Site, with Monitoring and Maintenance, for Army Civil Works Issues

Under this strategy, a performance criterion of 3 feet of stable cover, or equivalent, as agreed to by the Army and the State, would be established. Soils with residual concentrations of contaminants above the established action goals and located where the performance criteria cannot be met would be excavated and, with the concurrence of the State, some or all of the impacted soils would be managed on-site. Similar to the in-situ criteria described previously, the primary purpose of the performance criteria is to eliminate or significantly reduce any potential risks associated with residual concentrations of DDTs throughout the inboard area and PAHs adjacent to the runway by preventing exposure of future wetland receptors to site soils contaminated with these compounds.

The Army Civil Works Program shall ensure, through both construction and implementation of its plan for monitoring and adaptive management, that the HWRP would achieve and maintain the performance criteria of 3 feet of stable cover, or its equivalent. The duration of this HWRP obligation shall extend to a date 13 years following the date of levee breach and reintroduction of tidal influence to the Inboard Area. This duration is the limit of the authorized implementation period of the HWRP, in accordance with federal law. Thereafter, the property owner shall ensure that the performance criteria for the Inboard Area-Wide DDTs and PAHs in soils adjacent to the runway are maintained to the extent necessary to protect human health and the environment. The Army and the State have determined that the HWRP is likely to be an appropriate and effective mechanism for implementing this alternative. Institutional controls in the form of land use restrictions, would also be required where concentrations of Inboard Area-Wide DDTs and/or PAHs remain at levels above the action goals. Institutional controls are described further below.

Institutional Controls

Because contaminants exceeding action goals would remain on the site under both the in-situ and on-site management strategies, institutional controls in the form of land use restrictions would be required to ensure that future exposure of contaminants to human or environmental receptors does not occur. The institutional controls include those listed below.

- Grading, excavation, and intrusive activities must be conducted pursuant to a State-approved plan.
- The property shall not be used for residences, schools, daycare facilities, hospitals, hospices, or other similar sensitive uses.

State and federal agencies must have access to the property. The property owner shall provide access, on an as-needed basis, minimizing any interference with the implementation, operation, or maintenance of the ecosystem restoration project. Appropriate federal and state agencies and their officers, agents, employees, contractors, and subcontractors would have the right, upon reasonable notice, to enter the property where it is necessary to carry out response actions or other activities consistent with the purposes of the ROD/RAP. Appropriate federal and state agencies and their officers, agents, employees, contractors, and subcontractors would also have the right, upon reasonable notice, to enter adjoining property where it is necessary to carry out response actions or other activities consistent with the purposes of the ROD/RAP.

Selection of Remedial Strategies for Sites

The appropriateness of each remedial strategy at each specific contamination site was evaluated in the ROD/RAP based on the nine criteria set forth in the National Oil and Hazardous Substances Pollution Contingency Plan. These evaluation criteria served as the basis for conducting the detailed analysis during the FFS and for subsequently selecting a remedial action appropriate for the future wetland-use scenario. Final remedial actions for each site in the ROD/RAP were developed through this screening process. The criteria include

1. overall protection of human health and the environment;
2. compliance with ARARs;
3. long-term effectiveness and permanence;
4. reduction of toxicity, mobility, and volume, through treatment;
5. short-term effectiveness;
6. ability to implement;
7. cost;
8. regulatory acceptance; and
9. community acceptance.

Strategies that did not meet the first two criteria, overall protection of human health and the environment and compliance with Applicable or Relevant and Appropriate Requirements (ARARs), were eliminated from further evaluation. Specific aspects of the HWRP, such as the type of habitat planned for specific sites, or the potential for tidal action to erode down through fill and into contact with sites (scour), were considered in identifying, evaluating, and selecting remedial alternatives. The remedial action strategies proposed for each site are presented in Tables 2-1 and 2-2.

Remedial Strategies Assumed for Other Army BRAC Environmental Concerns for Purposes of Analysis in this SEIR

The ROD/RAP addresses "other BRAC environmental considerations," which includes the four ASR sites and the GSA/BRAC soil stockpiles. The ASR sites will follow a process of site investigation followed by a comparison of contamination levels, if any, to action goals presented in the ROD/RAP. If remediation is warranted based on this comparison, the RWQCB SCRs will identify the procedure for completion. The RWQCB will determine what additional actions, if any, may be required with respect to the management and reuse of the GSA/BRAC stockpiled soil. The Army will be responsible for conducting any additional actions required by the RWQCB as part of the SCRs.

To assess the potential impacts associated with remediation of these sites, remedial strategies are assumed in this SEIR that would be reasonable, based on what is known of these sites and what is described in the ROD/RAP, but also that would capture the full range of potential impact. The remedial strategies assumed here are only for purposes of analysis and in no way commit the Army or other responsible parties to a particular course of action.

For purposes of analysis in the SEIR it is assumed that excavation and off-site disposal would be implemented at all four ASR sites. If investigations determine that contamination at any of these sites warrants no further action or in-situ management, many of the impacts associated with remediation of these sites would be lower than those characterized in the SEIR (i.e., truck traffic, noise, dust).

As described in the ROD/RAP, the GSA/BRAC soil stockpiles contain petroleum related contaminants and based on existing available data do not contain CERCLA contaminant concentrations above hazardous waste thresholds. Additional characterization of the soils for contaminants may be required before final determination of a cleanup strategy. The RWQCB will ultimately determine what actions, if any, are required to address the stockpiles. For purposes of analysis in the SEIR, it is assumed that the majority of these soils do not contain contaminant levels above the ROD/RAP action goals and will therefore be managed on-site; however, it is assumed that approximately 10 percent, of the soil stockpiles contains contaminants above action goals and would require excavation and offsite disposal.

Discussion of quantities of soil for excavation and offsite disposal is provided below under the description of excavation and grading.

Construction Activities Associated with the Proposed ROD/RAP

Schedule of Remedial Activities

The remedial design for the inboard and coastal salt marsh sites will likely begin in 2003, with actual site cleanup activities anticipated to begin in 2004. The ultimate date for completion of cleanup activities will be determined following the conclusion of current site investigations and determinations as to the appropriate remedial strategies. Placement of cover will be accomplished through the HWRP and is anticipated to begin in 2004. Some cleanup activities, such as site-wide DDTs and PAHs near the runway, are issues and may be addressed concurrently with implementation of the overall HWRP. Levee breach is planned to occur no later than eight years after implementation of the HWRP, provided all requirements of the ROD/RAP have been met.

Excavation and off-site disposal for sites within the main airfield parcel, including portions of the PDD and the Buildings 35/39 area, are assumed to require approximately 2 weeks to complete. The total period for excavation and disposal of the current BRAC sites, assuming no overlap between cleanup activities on the main airfield parcel and the coastal salt marsh sites, would be approximately 6 months.

ASR sites, which are assumed in the SEIR to require excavation and offsite disposal, are estimated to require approximately 2 weeks to complete. The GSA/BRAC soil stockpiles would be addressed in two phases. The first phase would be characterization of issues and off-site removal of any soils with contaminants exceeding action goals. This phase is assumed to require 2 months for completion. It is assumed that the remaining stockpiled soil would be used or distributed on-site as part of the HWRP and is not included in the schedule for site remediation.

As stated previously, it is also assumed in the SEIR that the majority of the on-site management of DDT/PAH soils would be conducted concurrent with implementation of the HWRP and other soil movement associated with the HWRP. For this reason, although on-site management of these soils is part of the ROD/RAP, the schedule for completion of these activities would be determined through implementation of the HWRP.

Remedial activities would normally be conducted between 7:00 a.m. and 5:00 p.m., Monday through Friday. Remedial activities are not anticipated to occur on weekends or holidays. At certain sites where remedial actions are constrained by external factors, such as the seasonal constraint on activities in the coastal salt marsh due to interference with endangered species nesting, remedial actions may extend beyond the normal time frames and may also have to be conducted on weekends.

Site Preparation

Construction equipment would be moved to the site and staging areas would be established on the airfield property for equipment storage, decontamination, and soil transfer from off-road trucks to highway transport trucks. Additional measures such as installation of fencing or other support facilities would be conducted at this time. Preconstruction surveys in the coastal salt marsh area for sensitive species are considered to be part of the ROD/RAP.

Excavation and Grading

Contaminated material would be excavated or moved on-site using standard construction equipment (graders, front-end loaders, dump trucks, etc.). The Estimated soil quantities that would be excavated and disposed of off-site, or managed onsite, are provided in Table 2-3. The ROD/RAP estimates that 43,965 cubic yards of soil would be excavated and disposed of off site; 13,800 cubic yards of soil from the inboard area and 30,165 cubic yards of soil from coastal salt marsh area. The ROD/RAP provides for the possible excavation and disposal of additional soils based on the results of additional investigations and based on the geomorphic modeling and final HWRP design. Consequently, additional soil, beyond the ROD/RAP estimate, may be require excavation and off site disposal. For purposes of analysis in the SEIR, the following assumptions have been made with regard to additional soil removal from the site.

Table 2-3. Estimated Quantities of Soils for Excavation and Off-Site Disposal or On-Site Management

Site/Issue	Quantity of Soil (cubic yards)	
	Excavation and Off-site Disposal	On-site Management
Main Airfield Parcel Sites	13,800	n/a
Coastal Salt Marsh Sites	30,165	n/a
Other Sites[2]	16,000	n/a
DDT/PAH Soils	10,000[3]	861,000
GSA/BRAC Soil Stockpiles	10,000[3]	97,000
Total	*79,765*	*958,000*

[1]n/a - not applicable

[2]Estimated for purposes of analysis in the SEIR. Includes potential additional soils from the ASR sites that may require excavation and offsite disposal (assumed ~11,000 CY), and allowance for additional soils from sites proposed for in-situ management that may require excavation and offsite disposal, based on geomorphic modeling and final HWRP design (~5,000 based on 10% of site excavation total).

[3]Estimated for purposes of analysis in the SEIR to account for soils currently thought to be appropriate for on-site management but, as a result of further investigations, may require excavation and offsite disposal.

- BRAC Sites – As stated in the ROD/RAP, some BRAC sites proposed to be managed in-situ may require excavation and off site disposal if it is determined that the performance criterion of 3 feet of stable cover cannot be achieved. It is not possible to predict which sites, if any, would be changed from in-situ management to excavation and disposal, but to account for any such changes, it is assumed that an additional 4,400 cubic yards would be excavated and disposed of offsite (based on assumed 10 percent of the total quantity of soil estimated in the ROD/RAP for excavation and disposal).

- ASR Sites – For purposes of analysis in the SEIR, it is assumed that all four ASR sites would be excavated and disposed of offsite. To account for removal of soil from these sites, it is assumed that an additional 11,400 cubic yards of soil would be excavated and disposed of offsite (based on average site excavation average for ROD/RAP sites of 2,850 CY and presuming all four sites require some excavation).

- GSA/BRAC Soil Stockpiles – For purposes of analysis in the SEIR, it is assumed that some portion of the soil stockpiles contains soils with contaminant levels above action goals. It is assumed that 10,000 cubic yards of soil from the GSA/BRAC soil stockpiles would be disposed of offsite (approximately 10 percent total quantity of soil estimated in the ROD/RAP for excavation and disposal).

- Residual DDTs – As stated previously, the U.S. Army Corps of Engineers conducted additional DDT sampling on HAAF in 2003. Although the results of this sampling have not been published, it is assumed for purposes of the SEIR analysis that additional areas of soil containing DDTs above the ROD/RAP action goal (1 ppm) will be found. In accordance with the ROD/RAP, these soils would require excavation and offsite disposal. It is therefore assumed that approximately 10,000 cubic yards of additional soil would require excavation and offsite disposal due to DDT contamination (approximately 1 percent of the total quantity of soil estimated in the ROD/RAP for on-site management due to DDTs).

The ultimate quantity of soil excavated and disposed of off-site would depend on the extent of the contamination since, in accordance with the ROD/RAP, excavation would continue until action goals are achieved. Confirmation samples would be collected at sites to determine if action goals have been met. Confirmation samples would either be collected before excavation to determine the extent of the excavation required, or after excavation to confirm complete removal of contaminants to action goals. Confirmation sampling would be conducted, as necessary, on a site-by-site basis.

Where possible, excavation activities in the coastal salt marsh area would be conducted within the area to be excavated to avoid temporary construction of access roads. Where access to sites requires crossing the coastal salt marsh area, equipment that exhibits low impact to habitat and high efficiency would be used.

Excavations in the main airfield parcel would be backfilled only as necessary to eliminate unsafe conditions using clean on-site soil or rehandled dredged material. All excavations in the coastal salt marsh would be backfilled with clean on-site soil or rehandled dredge material of similar physical characteristics except those within the proposed channel cut by the HWRP. Excavations in the high marsh would also be contoured to eliminate topographic depressions and promote the reestablishment of native vegetation. The site is expected to revegetate naturally, and seeding or planting is not anticipated.

Storage and Transport of Soils

Excavated materials would need to be classified and stored on-site at the established staging areas. Waste profiling would be required to determine the classification of the waste. Soil blending may be required to reduce the moisture content of the excavated materials in order to reach moisture content acceptable for transportation and disposal. Soil would be classified for disposal before blending.

Excavated soil would be disposed of in an approved landfill, based on waste classification. Any contaminated soil transported off-site would be disposed of in an approved landfill or treated at a recycling facility. Based on previous remedial activities at HAAF, materials could be transported to local disposal sites (e.g., Redwood Sanitary Landfill in Novato for nonhazardous wastes) or distant disposal sites (e.g., Altamont Landfill in Alameda County for certain designated wastes or Kettleman Hills Landfill in Kings County for hazardous wastes).

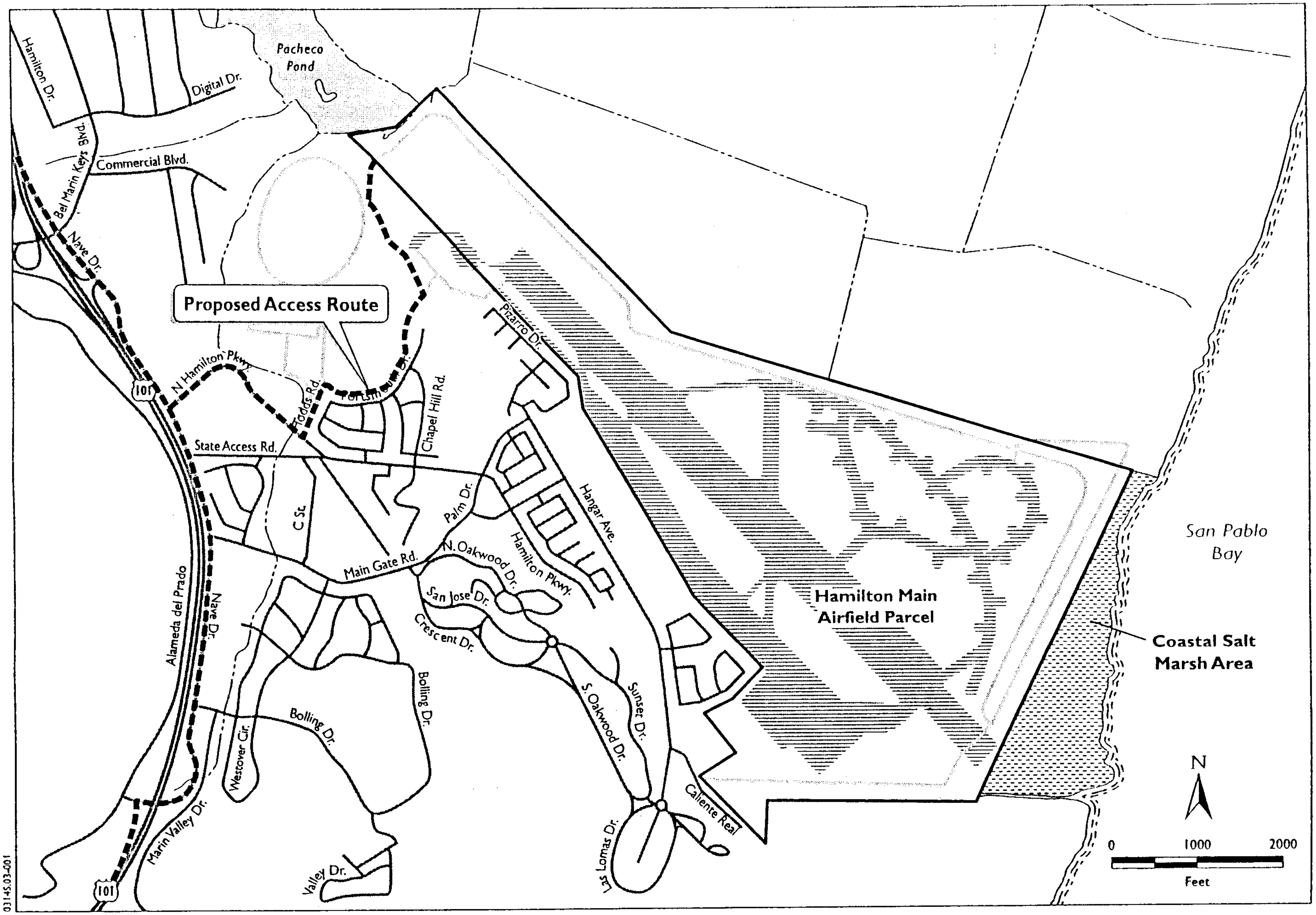
All vehicles transporting materials to and from the project site would follow a designated access route (Figure 2-6). From the project site, vehicles would follow a paved access road from the northwestern end of the airfield around the eastern perimeter of Landfill 26, to Todd's Road. At Todd's Road vehicles would turn south and proceed to North Hamilton Parkway, then turn west along North Hamilton Parkway to Nave Drive. Depending on the ultimate destination of the vehicles, vehicles would either turn right on Nave Drive to access Highway 101 north at the Bel Marin Keys entrance, or turn left on Nave Drive to access Highway 101 south at Alameda del Prado entrance. Access to remediation sites on the site would be primarily via the runway, taxiways, and other existing internal access roads, although some new access roads or overland travel would be required to reach coastal salt marsh sites.

Postconstruction Monitoring

Postconstruction observations would include physical observations to check for reestablishment of the vegetation and monitoring to address contaminants, where appropriate.

Intended Uses of this EIR

As indicated in the introduction, the subsequent EIR is an informational document for decision-makers and the public. CEQA requires that decision-makers review and consider the EIR in their evaluation of this project. The Conservancy, as the lead agency for the previous HWRP EIR/EIS and potential property recipient, is the lead agency responsible for certifying the subsequent EIR. DTSC and RWQCB are responsible agencies for the subsequent EIR and would rely on it to support its decision to approve or disapprove the RAP. DFG and BCDC are also responsible agencies with permitting authority over the proposed project. Agencies with permit review or approval authority over the project are summarized in Table 2-4.



Jones & Stokes

Figure 2-6
Proposed Access Route to the Project Site

Table 2-4. Summary of Local, State, and Federal Permit and Review Requirements

Agency	Permit/Review Required
California Coastal Conservancy	CEQA Lead Agency/Local sponsor of HWRP
Department of Toxic Substances Control	CEQA Responsible Agency Approval of the ROD/RAP
Regional Water Quality Control Board	SCRs pursuant to the Porter Cologne Water Quality Control Act CEQA Responsible Agency Approval of the ROD/RAP
U.S. Army Corps of Engineers	Federal Sponsor of HWRP Internal Review of compliance with Section 404 of the Clean Water Act and Section 10 of Rivers and Harbors Act
U.S. Fish and Wildlife Service	Section 7 Consultation for effects to listed federal species
NOAA Fisheries	Section 7 Consultation for effects to listed federal species
Bay Conservation and Development Commission	Potential Coastal Consistency Determination
California Department of Fish and Game	Potential Section 2081 consultation for effects to listed state species

Section 3.1
Geology, Soils, and Seismicity

Data Sources

This section is derived primarily from the HWRP EIR/EIS (Conservancy 1998), which was based on previous geotechnical investigations and environmental studies performed within the HAAF main airfield parcel and adjacent coastal salt marsh. Previous studies included:

- Hamilton Wetland Restoration Project Final EIR/EIS (Conservancy 1998),
- Geotechnical Investigation Bel Marin Keys Unit 5 (Miller Pacific Engineering Group 1995),
- Bel Marin Keys Unit V Final EIR/EIS (Environmental Science Associates 1993), and
- Draft Hamilton Wetlands Conceptual Restoration Plan (Woodward-Clyde 1998).

Environmental Setting

Regional Geology and Topography

The project area is located within California's geologically and seismically active Coast Ranges Geomorphic Province. The province is characterized by a series of northwest-trending faults, mountain ranges, and valleys (Environmental Science Associates 1993).

Two distinct geomorphic zones, the Bay Plain and Franciscan Uplands zones, occupy the project site. The Bay Plain extends from the edge of San Pablo Bay to the foot of the hills immediately west of the HAAF parcel. Adjacent to San Pablo Bay, the nearly level site consists of former mudflats and marshlands that have been separated from tidal action by dikes and levees since the early 1900s; the site is drained by a system of trenches and pumps (Robert Bein, William Frost & Associates 1995). After its removal from tidal action, the soil became desiccated and began to settle below its original elevation. Current ground elevations at the site range from +7 to –7 feet National Geodetic Vertical Datum (NGVD), with a typical ground elevation of –5 feet (Woodward-Clyde 1998).

A thin near-surface crust of desiccated soft marine clays known as bay mud covers the area, although in the HAAF main airfield parcel, the surface crust also consists of several feet of granular fill and pavement in the former runway and taxiway areas. The project area is underlain by bay mud to depths that vary from 70 feet near San Pablo Bay to 30 feet or less at the northwestern end of the site. The water table is typically several feet below the surface and varies somewhat seasonally.

Soils

Soils on the project site consist primarily of naturally occurring clays, clay loams, and gravelly sandy loams. On the lower, developed portions of the HAAF area, natural soils have been extensively disturbed by grading, fill placement, and construction of buildings and paved areas. Three soil types are present:

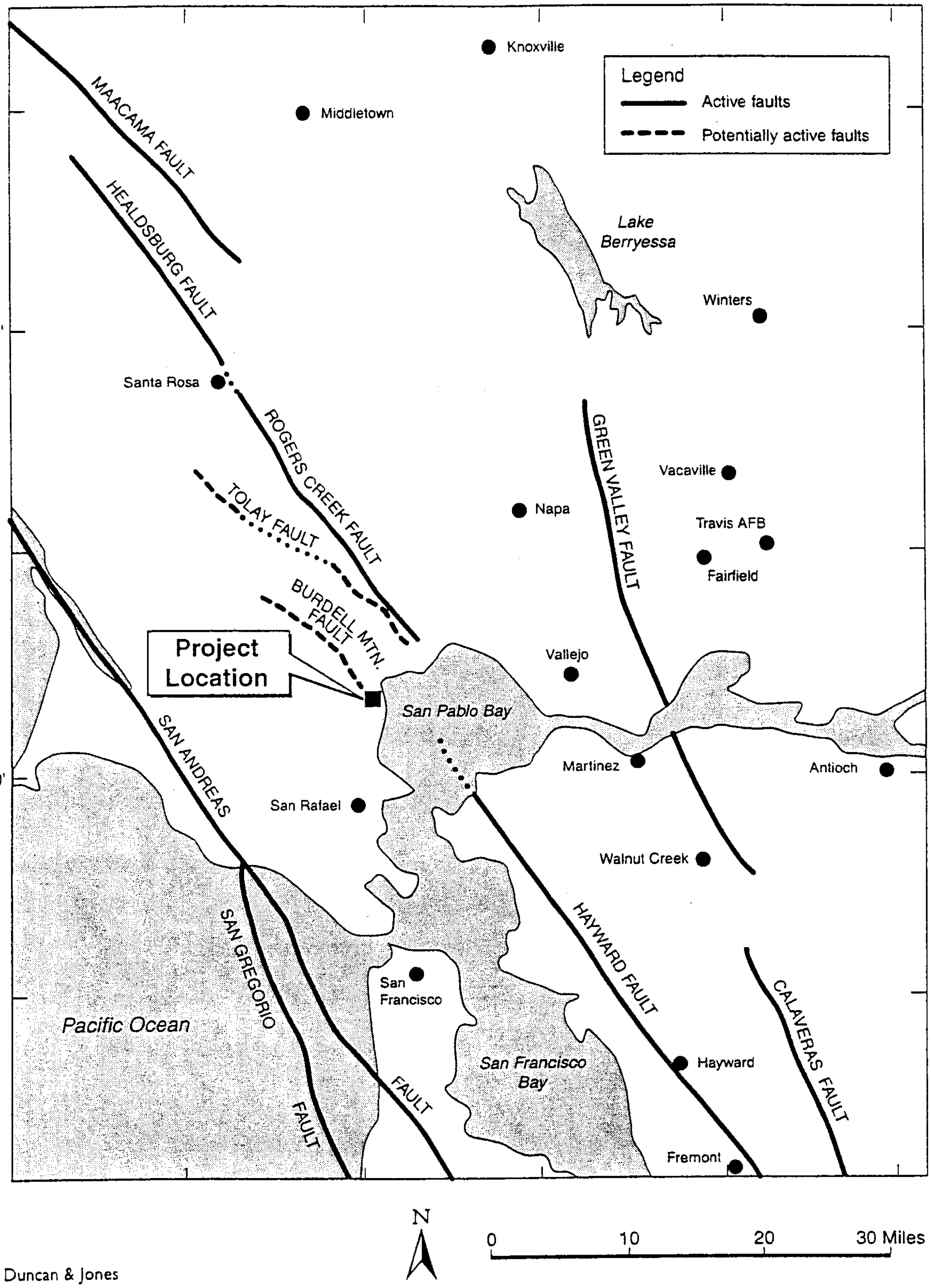
- Saurin Urban Land Bonnydoon,
- Xerorthents-Urban Land, and
- Xerorthents.

The Saurin series is a clay loam over sandstone bedrock. The Bonnydoon soil is a gravelly loam, and the Xerorthents type is used to describe the highly variable, disturbed urban flatlands. Surrounding areas contain Cortina gravelly sandy loam (industrial park area to the north) and Reyes clay (St. Vincent's Silveira Landholdings to the south). The native Novato soil series is now present in the HAAF area only in the salt marsh east of the levee (Robert Bein, William Frost & Associates 1995).

In addition to the three naturally occurring soil types, local upland soil material has been placed as fill ranging in depth from several inches to several feet. This fill has been compacted over extensive areas of Reyes soil, under the roadways and parking pads, and as berms extending into vegetated areas. The fill material is variable but is commonly a reddish-brown, very gravelly, sandy clay loam, which is typical of subsoil material from any of the four major upland soil series in the area (U.S. Army Corps of Engineers 1996).

Seismicity and Geologic Hazards

The project area is located in one of the most seismically active regions in the United States. The seismic setting of the project site is dominated by the Hayward fault to the southeast, the San Andreas Fault to the west, and the Healdsburg-Rogers Creek fault to the northeast (Figure 3.1-1).



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Source: Duncan & Jones

Jones & Stokes

Figure 3.1-1
Regional Faults

The maximum credible earthquake for each of these faults, measured in Richter scale magnitude (M), is as follows:

- Hayward fault—7.5 M
- San Andreas fault—8.3 M
- Healdsburg–Rogers Creek fault—7.2 M

Two smaller, potentially active faults are near the site. A possible trace of the Burdell Mountain fault is mapped as extending toward and terminating north and west of the site. Estimates differ regarding the date of the last displacement on the Burdell Mountain fault. It is generally thought to have been active during the Quaternary period (the last 2.5 million years), and some evidence suggests that it may have been active during the Holocene epoch (the last 11,000 years) (Environmental Science Associates 1993). The Tolay fault also reaches to within 6.5 miles of the site and may be active (Robert Bein, William Frost & Associates 1995).

The project area is likely to undergo ground shaking from a major earthquake. The U.S. Geological Survey has estimated a 67 percent probability that there will be one or more earthquakes of magnitude 7.0 or greater in the Bay Area in the next 30 years (Environmental Science Associates 1993).

Four major hazards are associated with earthquakes: ground shaking, surface fault rupture, ground failure, and inundation resulting from earthquake-generated waves (tsunamis or seiches). These are described below.

Ground Shaking

Factors that would affect the intensity of ground shaking in the project area during an earthquake on a nearby fault include

- characteristics of the fault generating the earthquake,
- distance to the fault and earthquake hypocenter,
- earthquake magnitude,
- earthquake duration, and
- site-specific geologic conditions (i.e., the nature of the geologic materials underlying the site) (Miller Pacific Engineering Group 1995).

Unconsolidated materials tend to amplify ground shaking to a greater extent than bedrock. Accordingly, ground shaking during an earthquake would likely be more intense at the site than in nearby areas underlain by bedrock.

Surface Fault Rupture

No active or potentially active faults are known to exist within the boundaries of the HAAF. HAAF is also not within an Alquist–Priolo Special Studies Zone, as designated by the California Division of Mines and Geology (Hart and Bryant 1997). Accordingly, the potential for surface fault rupture to occur in this area is remote (Miller Pacific Engineering Group 1995).

Ground Failure

Ground-failure hazards of potential concern at the site include liquefaction, earthquake-induced settlement, and lurching. All of these processes involve the displacement of the ground surface resulting from a loss of strength or failure of the underlying materials because of ground shaking.

Liquefaction is the sudden loss of soil strength during strong ground shaking, which results in temporary fluid-like behavior of the affected soil materials. Liquefaction typically occurs in areas where groundwater is shallow and materials consist of clean, poorly consolidated, fine sands and silts. The bay mud deposits that underlie the HAAF are not conducive to liquefaction because they do not contain substantial quantities of clean sands and silts (Miller Pacific Engineering Group 1995).

Ground shaking can also induce the settlement of loose, granular soils (e.g., clean sands and silts) located above the groundwater table. The bay mud deposits that underlie the site consist of clays and silts rather than clean sands. Thus, there is no potential for seismic settlement at the site (Miller Pacific Engineering Group 1995).

Lurching, or lurch cracking, is the cracking of the ground surface in soft, saturated material as a result of earthquake-induced ground shaking. Lurch cracking generally occurs along the edge of steep embankments where stiff soils (e.g., manufactured fill materials) are underlain by soft, compressible soils and geologic deposits (Miller Pacific Engineering Group 1995). Because the HAAF site is underlain by soft, compressible bay mud deposits, potential exists for earthquake-induced lurch cracking to occur during an earthquake, particularly where deposits are bordered by steep channel banks or adjacent hard ground. (Environmental Science Associates 1993.)

Earthquake-Induced Inundation (Tsunamis and Seiches)

Tsunamis are sea waves produced by large-scale seismic events on the ocean floor. Seiches are earthquake-generated waves that form in enclosed water bodies, such as lakes or tidal marshes. Both can cause temporary inundation of upland areas. Because of its proximity to San Pablo Bay, the project site may be affected by tsunamis and seiches.

A tsunami with a 100-year recurrence interval (i.e., a 1 percent probability of occurrence in a given year) has an estimated run-up of 3 feet near the site. Likewise, a seiche generated in the vicinity of the site is expected to be relatively small (less than a few feet) (Miller Pacific Engineering Group 1995). At its current elevation, the HAAF main airfield parcel could be flooded by a tsunami if the existing outboard levee fails or is overtopped (Environmental Science Associates 1993).

Environmental Impacts and Mitigation Measures

Approach and Methods

The following evaluation of potential geologic, seismic, and soil-related impacts associated with site remediation was based on a review of geotechnical reports prepared for HWRP and for developments in and immediately adjacent to the site. The evaluation incorporates the professional opinions rendered in these reports as well as professional judgment.

Impact Mechanisms

The impacts associated with remediation activities would be similar to impacts for construction activities. Impacts would primarily be related to loss or degradation of soils on the site, or modifications to the site that could result in personal injury; loss of life; or substantial damage to property, structures, or related improvements. For the HWRP, existing levees where excavation or other activities may occur would be the principal feature that could be affected by ground-disturbing activities proposed in the ROD/RAP. The ROD/RAP activities would be temporary and would not result in the permanent location of structures or people in a seismically active area.

Thresholds of Significance

The following significance criteria were used to evaluate the proposed actions contained in the ROD/RAP. Regarding geology, soils, and seismicity, the proposed project would have a significant impact if it would

- result in substantial soil erosion or sedimentation; or
- cause personal injury, loss of life, or substantial damage to property, structures, or site improvements as the result of geologic, seismic, or soil-related hazards that would be *created* during the remediation of the site.

Impacts and Mitigation Measures of the Proposed Project

Impact G-1: Potential Short-Term Increase in Erosion and Sedimentation Rates during Construction. Although the erosion hazard throughout the site is slight under normal conditions, ground disturbance associated with remediation activities would expose bare soil to erosion by water and wind and could increase erosion and sedimentation rates above preconstruction levels. Several sites proposed for excavation are adjacent to area water bodies, including San Pablo Bay, outfalls into the Bay, or the PDD. Due to the nature of the contaminated soils on the site and the location near sensitive receptors, control measures to prevent contaminated sediment from migrating into surrounding water bodies would be required. Control measures for sedimentation associated with the remedial actions are addressed in Section 3.2, "Water Resources." This impact would be *less than significant* due the minimal erosion hazard on the site and implementation of control measures described in Section 3.2.

Impact G-2: Potential Damage to Levees Resulting from Remedial Activities. Remediation at several sites would occur on and adjacent to the northern and eastern levees. Excavation would occur on the levee slopes themselves, and excavated soil would be loaded onto trucks on top of the levee. The levees are constructed on bay mud, which is structurally weak. Removal of soils on the levee or levee aprons or weakening of the levees from large, loaded trucks driving on them, may stress or weaken the levees and lead to failure. Slope stability would be particularly critical in the future when the outboard levee is breached as part of the HWRP and the area is inundated, providing additional external force on levees. Factors influencing slope stability include strength of natural soils and fills, embankment heights and slopes, and depth of inundation. The severity of seismic shaking, in conjunction with the above factors, also affects slope stability.

To ensure the stability of levee slopes is maintained, the ROD/RAP assumes the following.

- Smaller trucks will be used to move soil from sites along the levees to a staging area, where soil will then be transferred to larger transport trucks.
- All soil excavations would be backfilled with suitable material.

Stability of levees would also increase under the HWRP implementation as a result of construction of new levees, reinforcement of existing levees, and consolidation and settlement of material placed within the levees.

This impact is considered *less than significant* because measures incorporated into the ROD/RAP are adequate to ensure the levees will not be compromised and because subsequent design of the levees under the HWRP will minimize the potential for slope failure.

Section 3.2
Water Resources

Environmental Setting

Data Sources

The evaluation of water quality effects is based on the ROD/RAP, the 1998 EIR/S for the HWRP, source documents for that document, as well as other sources that include:

- San Francisco Bay Plan (San Francisco Bay Conservation and Development Commission 2001);
- Regional Toxic Hot-Spot Cleanup Plan (San Francisco Regional Water Quality Control Board 1999);
- Draft – Beneficial Reuse of Dredged Materials: Sediment Screening And Testing Guidelines (San Francisco Regional Water Quality Control Board 2000);
- Report of the San Francisco Airport Science Panel (National Oceanic and Atmospheric Administration 1999);
- San Francisco Bay Region–Water Quality Control Plan (San Francisco Regional Water Quality Control Board 1995); and
- Joint Stormwater Agency Project to Study Urban Sources of Mercury, PCBs, and Organochlorine Pesticides. Final Report. (Kinnetic Laboratories Incorporated 2002).

Regulatory Setting

Federal Plans, Programs, and Policies

Clean Water Act

The EPA has granted the State of California primacy in administering and enforcing the provisions of the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES). NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

The State of California adopts water quality standards to protect beneficial uses of state waters as required by Section 303 of the CWA and the Porter–Cologne Water Quality Control Act of 1969 (PCWQCA).

Placement of clean fill materials into waters of the United States is regulated by Section 404 of the CWA, which is administered by the Corps. Under the CWA, the state RWQCB must issue Section 401 Water Quality Certification or a waiver for a project to be permitted under Section 404. Water quality certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States.

State Plans, Programs, and Policies

The McAteer–Petris Act of 1965

The McAteer–Petris Act, enacted on September 17, 1965, established the San Francisco Bay Conservation and Development Commission (BCDC) as a temporary state agency charged with preparing a plan for the long-term use of the Bay (Bay Plan). In August 1969, the McAteer–Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the Bay Plan into state law.

Any person or governmental agency wishing to place fill, extract materials, or make any substantial change in use of any water, land, or structure within the area of BCDC's jurisdiction must secure a permit from BCDC. Upon receiving an application for a major permit, BCDC will transmit a copy of the application to the San Francisco Bay RWQCB and certain other Bay resource and regulatory agencies. Within 30 days, the RWQCB must file a report with BCDC that indicates the effect of the proposed project on water quality within the Bay. BCDC must take action on a permit application, either denying or granting the permit, within 90 days after a complete application is filed. The permit will be automatically granted if BCDC fails to take specific action within that time period.

A permit will be granted for a project if BCDC finds and declares that the project is either (1) necessary to the health, safety, or welfare of the public in the entire Bay Area; or (2) of such a nature that it will be consistent with the provisions of the McAteer-Petris Act and the provisions of the San Francisco Bay Plan then in effect. The main requirement of the Commission's law and policy is to minimize fill in the Bay and maximize public access to and along the shoreline. The Commission also has policies relating to water quality, Bay wildlife and habitat, and other aspects relating to conservation and development of the Bay as a regional resource.

BCDC also administers the federal Coastal Zone Management Act (CZMA) for the Bay segment of the California coastal zone. Federal agencies must submit a determination regarding the consistency of their proposed activities with BCDC's federally approved coastal management program, which is based on BCDC's law and policies. BCDC will then either concur with or object to the consistency determination.

The Porter–Cologne Water Quality Control Act of 1969

The PCWQCA established the State Water Resources Control Board (SWRCB) and divided the state into nine regional basins, each with a regional WQCB. The SWRCB is the primary state agency responsible for protecting the quality of the State's surface and groundwater supplies. The San Francisco Bay RWQCB has jurisdiction over the project area.

The PCWQCA authorizes the SWRCB to draft state policies regarding water quality. The PCWQCA requires that the SWRCB or the RWQCB adopt water quality control plans (Basin Plans) for the protection of water quality. A Basin Plan must

- identify beneficial uses of water to be protected,
- establish water quality objectives for the reasonable protection of the beneficial uses, and
- establish a program of implementation for achieving the water quality objectives.

The basin plans also provide the technical basis for determining WDRs, taking enforcement actions, and evaluating clean water grant proposals. The RWQCB adopted the most recent Basin Plan in May 1995.

In addition, the PCWQCA authorizes the RWRCB to issue Cleanup and Abatement Orders (Site Cleanup Requirements) and Waste Discharge Requirements (WDRs) for discharges that pollute or threaten to pollute surface or groundwater.

California Regional Water Quality Control Board—San Francisco Bay Region

Water quality in streams and aquifers of the region is guided and regulated by the California RWQCB, San Francisco Bay Region. The RWQCB has primary authority for ensuring that water resources are protected from degradation by pollutant discharges. The State Policy for Water Quality Control aims to achieve the highest water quality consistent with the maximum benefit to the people of the state.

To develop water quality standards that are consistent with the uses of a water body, the RWQCB attempts to classify historical, present, and future beneficial uses as part of the Basin Plan. Beneficial uses of the major rivers and groundwater basins, along with narrative and numerical water quality objectives, are established in the Basin Plan for the region (San Francisco Regional Water Quality Control Board 1995). The Basin Plan is periodically reviewed and updated pursuant to PCWQCA.

The USEPA has also promulgated freshwater and saltwater criteria for 126 priority pollutants (13 heavy metals, asbestos, and 112 organic compounds) in the National Toxics Rule. The California Toxics Rule was adopted in May 2000 and supersedes the National Toxics Rule in California for most pollutants. The RWQCB is currently amending the Basin Plan to address the water quality objectives promulgated in the California Toxics Rule.

The RWQCB is required to identify water bodies that do not meet water quality objectives pursuant to Section 303(d) of the CWA. Existing beneficial uses of San Pablo Bay include: commercial and sport fishing; estuarine habitat; industrial service supply; fish migration; navigation; preservation of rare and endangered species; contact and non-contact water recreation; shellfish harvesting; fish spawning; and wildlife habitat. Additional beneficial uses are defined for other waterbodies in the region, such as Novato Creek. No existing beneficial uses of groundwater are defined for the project area.

The Basin Plan has adopted the following objectives, which may apply to the proposed wetland restoration, to protect water resources.

- Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growth causes nuisance or adversely affects beneficial uses.
- Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.
- Waters shall be free of discoloration that causes nuisance or adversely affects beneficial uses.
- No pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.
- Discharges shall not result in pesticide concentrations in bottom sediment or aquatic life that adversely affects beneficial uses.

- Persistent chlorinated hydrocarbon pesticides shall not be detectable in water within the accuracy of the analytical methods approved by the USEPA.
- The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
- Waters shall not contain suspended materials in concentrations that cause nuisance or adversely affect beneficial uses.
- Groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses.

The Basin Plan also restricts increases in water temperature and reduction of dissolved oxygen concentrations, especially in water bodies supporting cold-water aquatic organisms.

Site Cleanup Requirements

The RWQCB follows policies and procedures in State Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code 13304," for addressing cleanup of pollution threatening or impacting groundwater, or from recent or historical surface spills, subsurface releases, and all other unauthorized discharges that pollute or threaten to pollute surface or groundwater. Under Water Code 13304, the RWQCB can issue cleanup and abatement orders (site cleanup requirements) to address investigation, remediation, and cleanup by a discharger.

Waste Discharge Requirements

The San Francisco RWQCB establishes WDRs to protect those beneficial uses identified in the Basin Plan. Beneficial uses protected by the Basin Plan that would be applicable to the proposed site remediation include wildlife and fish habitat, estuarine habitat, and preservation of rare and endangered species. In establishing WDRs, the San Francisco RWQCB considers the potential impact on beneficial uses within the area of influence of a discharge and the existing quality of receiving waters based on the appropriate water quality objectives.

WDRs issued for a project based on water quality objectives may contain more- or less-restrictive conditions that take into account factors such as economic considerations in addition to actual and potential beneficial uses. Because San Pablo Bay is considered a "water quality limited segment" in the Basin Plan, more stringent water quality objectives and treatment levels could be required for any discharge to this area. WDRs typically address turbidity, suspended solids, and other water quality issues. The RWQCB will issue WDRs to address placement of dredged sediments on the site as part of the HWRP.

NPDES Storm Water Discharge Permits

In 1992, the SWRCB adopted a General Construction Storm Water Discharge Permit, which requires land owners to file a Notice of Intent to discharge stormwater runoff to waters of the U.S., from land disturbances greater than 5 acres. The permit was reissued in 1999 and modifications made in 2001. The permit generally requires dischargers to eliminate non-stormwater discharges to stormwater systems, develop and implement a stormwater pollution prevention plan, and perform inspections of stormwater pollution prevention measures.

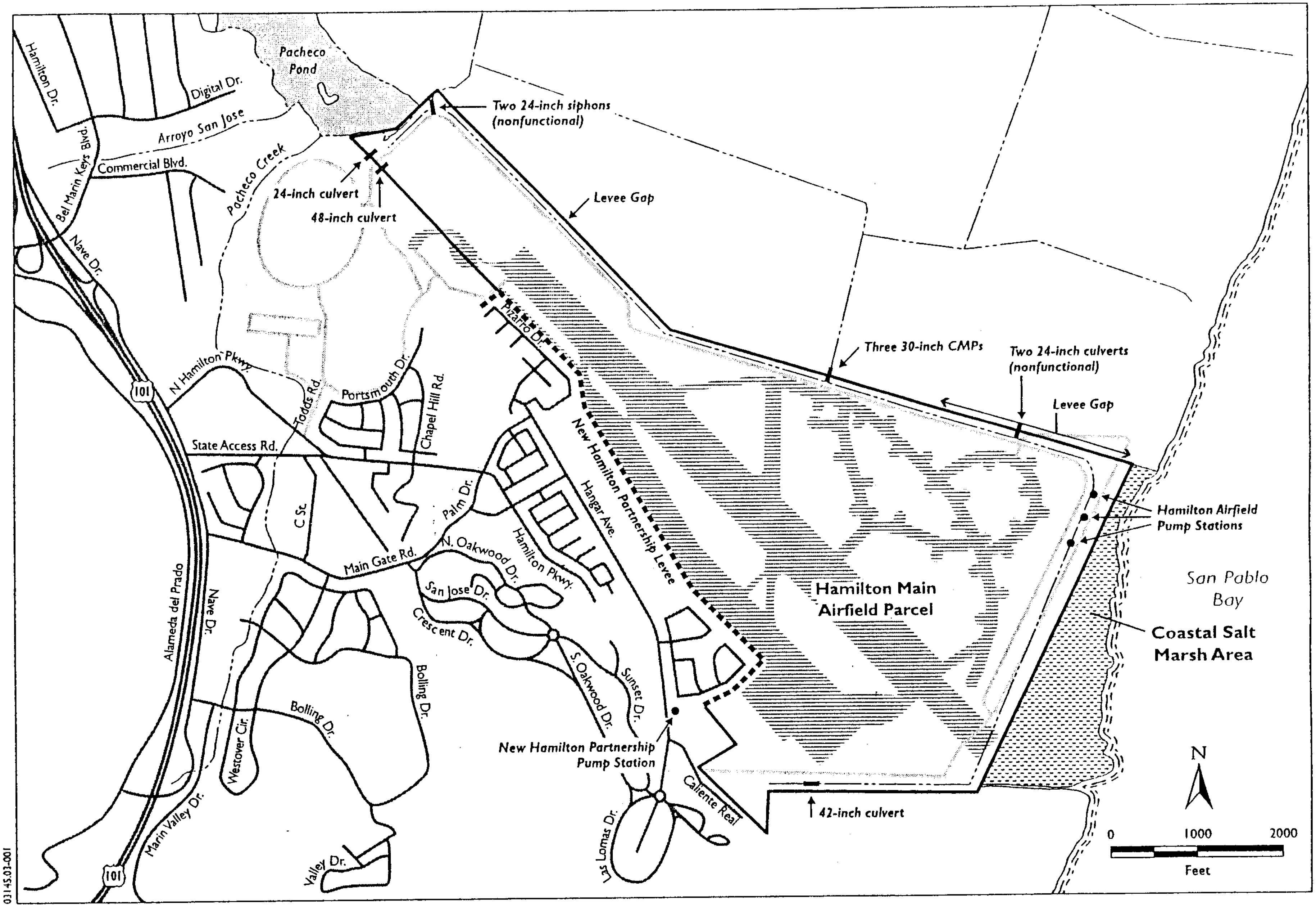
Surface-Water Drainage

Major drainage features and hydrologic resources in the project area are include Pacheco Pond, Pacheco Creek, and Arroyo San Jose (Figure 3.2-1).

Drainage from the main airfield parcel is collected in the perimeter drainage (PDD) ditch system and conveyed to pump stations on the margin of San Pablo Bay (Buildings 35, 39, and 41). In addition to the main airfield parcel, the PDD receives drainage from several adjacent areas:

- drainage flows through a 42-inch gated culvert through the perimeter levee near the southwest corner of HAAF on the St. Vincent's property, which carries flows from the western portion of the Coast Guard housing and Long Point peninsula upland areas adjacent to the airfield, and from a portion of the St. Vincent's property;
- drainage from the New Hamilton Partnership development, the eastern portion of the Coat Guard housing area, and other areas adjacent to the west side of the airfield that are conveyed to the ditch in two outfalls—one near Reservoir Hill (west outfall) and one near the southwest corner of the airfield (east outfall);
- flood overflow (under some conditions) from Pacheco Pond and the BKMV parcel through a levee gap approximately 2,000 feet southeast of the northwest corner of the HAAF parcel; and
- flood overflow (under some conditions) from Pacheco Pond and the BMKV parcel through three 30-inch culverts through the perimeter levee (located high on the slope).

The HAAF site receives flood overflows from Pacheco Creek via 48- and 24-inch flap gates that serve the Landfill 26, Ammo Hill, and POL Hill areas. However, prior to 1999, the Army completed construction of a berm around a portion of Landfill 26 to protect the landfill from overflow from Pacheco Creek up to the 100-year flood. (HAAF BRAC Environmental Office 2001.) Historically, HAAF also received overflows from Pacheco Pond via 2 slide-gated siphons. These siphons are no longer operational (Philip Williams & Associates 1998). Flood overflow and normal drainage from the SLC parcel also formerly entered the site through two 24-inch gated culverts. These culverts are also no longer operational.



Jones & Stokes

Figure 3.2-1
Regional Drainage Features

Regional Water Quality Conditions

San Pablo Bay is the receiving water for all drainage from the area. The Bay receives substantial inflow from the Sacramento and San Joaquin Rivers and smaller amounts of inflow from the Petaluma and Napa Rivers and Sonoma and Novato Creeks. Water quality is maintained by circulation and flushing as a result of tidal action and freshwater inflow. Water quality and salinity in the Bay are determined by the relative mix of these water sources.

In a natural system, surface-water quality depends primarily on the mineral composition of the rocks in the upper source areas of the stream. Farther downstream, the water quality is influenced by the mineral characteristics of the materials through which it flows and by contributions from tributaries. In an urban or developed system such as San Francisco Bay, water quality is also affected by discharges from point and nonpoint sources.

Water quality in San Pablo Bay has been evaluated as part of a study of San Francisco Bay (Aquatic Habitat Institute 1990). Data from the Aquatic Habitat Institute study indicate that levels of some pollutants may be lower than indicated by previous data. However, several pollutants are still present at levels of concern in San Pablo Bay and San Francisco Bay as a whole. The SWRCB submitted the 2002 Clean Water Act Section 303(d) impaired water body list to the U.S. EPA on February 28, 2003. Table 3.2-1 lists waters in the San Pablo Bay region that have been designated as impaired under Section 303(d) of the CWA and the pollutants for which they were so designated. The designation as impaired can be the result of pollutants, such as heavy metals or pesticides, or a physical property of the water, such as dissolved oxygen or temperature.

The water quality in the San Pablo Bay tributaries is influenced by past and present agricultural activities. Sonoma Creek and the Petaluma and Napa Rivers are impaired by sediment, nutrients, and pathogens that are all related to the abundant agricultural activities found in their watershed. The North Bay and San Pablo Bay are also impaired by persistent agricultural chemicals, such as DDT and Chlordane, which may have been used anywhere in the Sacramento and San Joaquin Rivers watersheds. These areas are also impaired by metals and PCBs from past industrial and mining activities. Water quality in the area is further impaired because of mercury, and a health advisory has been issued for the entire San Francisco Bay estuary (California Regional Water Quality Control Board, San Francisco Bay Region 1997) because of mercury levels in aquatic life.

Table 3.2-1. Waters in the San Pablo Bay and Tributary to the Bay Listed as Impaired or for Monitoring by the San Francisco Bay Regional Water Quality Control Board under Section 303(d) of the Clean Water Act

Impaired Water Body/Waterway	*Impairment Listing (Pollutant)*
Petaluma River	Diazinon
Petaluma River - tidal portion	Nickel, Copper
Monitoring Water Body/Waterway	*Pollutant Monitoring*
San Pablo Bay	Copper, Nickel, PAHs, PBDEs
Novato Creek below Stafford Dam	Sedimentation

Source: State Water Resources Control Board 2003.

Site-Specific Water Quality Conditions

The existing soil conditions are important in determining water quality at the proposed wetland restoration site. The HAAF inboard area is a former tidal salt marsh and mudflat. Soils in this area can affect water quality because of the presence of acid-sulfate soils; however, sampling of stormwater runoff by the Army indicates that the pH of water from the site is slightly basic (pH 7.2 to 7.9 compared to neutral pH of 7.0) (U.S. Army Corps of Engineers 2003).

Urban Runoff

Urban runoff from the adjacent properties is collected by a series of storm drains and a perimeter drainage ditch (PDD) around the airfield. The PDD drains to pump stations that discharge into San Pablo Bay. Urban runoff from paved areas and other impervious surfaces, as well as former activities such as aircraft and vehicle maintenance, can contain a variety of pollutants that can degrade water quality. The historic discharge of urban runoff from the former HAAF has affected the PDD, as well as the upper intertidal zone of the salt marsh near the pump station outfall. Several sites associated with site drainage are addressed in the ROD/RAP, including the PDD, spoils piles associated with periodic dredging of the PDD, the pump station locations (building 35 and 39, and the building 41 area), and the outfall drainage ditch in the outboard salt marsh. Elevated levels of metals, petroleum hydrocarbons, and pesticides have been detected in sediments associated with these features. PAHs and beryllium have been detected in the PDD. Residual contamination on the site is described in detail in Chapter 2, "Description of the Proposed Project" and Section 3.6, "Hazardous Substances and Waste."

Pacheco Pond (also referred to as Ignacio Reservoir), immediately northwest of HAAF, receives flow from Arroyo San Jose and Pacheco Creek, as well as stormwater runoff from the adjacent business park. Pacheco Creek runs through the northwest portion of the former HAAF. Water quality concerns at Pacheco Pond have been investigated in the past but no contamination issues have been documented. Lack of aeration and circulation in Pacheco Pond, combined with stormwater runoff, may potentially be reducing dissolved oxygen, thereby causing periodic toxicity (San Francisco Regional Water Quality Control Board 2001b). Previously, during high tides, when Novato Creek backed up, excess water flowed into the pond and then through siphons in the west levee and into the airfield northern drainage ditch. However, presently these siphons are inoperable and flow from the pond is not possible. The HWRP conceptual design includes the possibility of connecting Pacheco Pond to the restored wetland area on the HAAF parcel.

Permitted Discharges

Novato Sanitation District (NSD) discharges treated wastewater through a 54-inch reinforced-concrete pipe into San Pablo Bay. The outfall line follows the northern boundary of the site, between the HAAF and SLC parcels, and discharges through a diffuser about 900 feet offshore into the intertidal zone of the Bay. Before the treated wastewater is discharged into the Bay, the NSD dechlorination plant performs final treatment of the wastewater discharge stream. Treated wastewater is discharged only during winter and spring months. During the balance of the year the treated wastewater is recycled and used for irrigation.

Groundwater

The shallow groundwater at the proposed wetland restoration site has a high salinity because of the historic influence of San Pablo Bay. Groundwater is of poor quality and is not used as a potable water source. The airfield is underlain by bay mud ranging from 30 feet to 70 feet in depth (see Section 3.1 "Geology, Soils, and Seismicity"). Due to the extent of bay mud and the lack of groundwater movement through it, there is no aquifer on the site and shallow groundwater flows the Bay via the PDD. Because of the prevalence of bay muds, runoff is unlikely to recharge the deeper groundwater under the wetland restoration site. Groundwater may be influenced by freshwater levels in Pacheco Pond and may be less saline near the pond. The general direction of groundwater flow is to the east (Woodward-Clyde 1985). However, the low transmissivity of bay muds greatly reduces the movement of shallow groundwater into San Pablo Bay. Groundwater also discharges to the interior drainage channels and is pumped to San Pablo Bay.

Contaminants have been detected in groundwater at HAAF, such as petroleum hydrocarbons (e.g., gasoline and oils) and metals. A discussion of groundwater investigations on the site is provided in Appendix B of the ROD/RAP. Based on these previous investigations, it was determined that no further action was required for groundwater in the Main Airfield Parcel or CSM area (CH2M Hill 2003).

Wetland Water Quality

Wetland water quality is influenced by water depth and morphology and the relationship of the wetland to the upstream watershed. The hydrologic regime determines the frequency, depth, and duration of the water's influence on vegetation and the aquatic functions that the wetland provides. Wetlands with little flushing and high nutrient and contaminant loading rates can become stagnant, resulting in low dissolved-oxygen content, decreased aquatic habitat quality, and adverse effects on fish and wildlife. These conditions can also promote excess algal growth and increase mosquito-breeding potential. An adequate supply of fresh water to the wetland improves the capacity for removal of nutrients and contaminants. In a salt marsh environment, adequate tidal flushing maintains good water quality by reducing the potential for development of these conditions.

Wetlands can improve the quality of source waters by decreasing water velocity, inducing sediment deposition, and removing excess nutrients and contaminants. Nutrients and contaminants can adsorb (attach themselves) to sediments in a wetland and be removed by deposition, chemical breakdown, and assimilation into plant and animal tissues.

Environmental Impacts and Mitigation Measures

Approach and Methods

Water quality effects were evaluated qualitatively based on professional judgment. Potential water quality impacts were identified by considering the concentrations of residual contaminants in soil and the remedial actions proposed in the ROD/RAP to determine if impacts to water quality could occur. The water quality analysis also relies on other sections in this chapter, especially Section 3.1 "Geology, Soils, and Seismicity" and Section 3.6 "Hazardous Substances and Waste." The evaluation of water quality effects is fundamentally based on the action goals and remedial action objectives developed in the FFS and the ROD/RAP, which rely on detailed pollutant transport and fate models developed for the Human Health and Ecological Risk Assessment (U.S. Army Corps of Engineers 2001).

Impact Mechanisms

Disturbance of contaminated soils has the potential to release contaminants into the water column through direct contact between exposed soils or contaminants flowing into water bodies in sediments or from dewatering of excavated materials. Sites proposed for excavation are in the CSM and adjacent to San Pablo Bay, or within the perimeter drainage ditch. The site is also adjacent to Pacheco Pond; however runoff from the HAAF parcel does not drain to the pond.

With implementation of the HWRP, the HAAF parcel will drain directly to San Pablo Bay and will not drain to Pacheco Pond. In addition, residual contamination is proposed to be addressed through in-situ or on-site management. Future channel scour following breach of the perimeter levee may expose these contaminants to the water column. As proposed in the ROD/RAP, morphological modeling to define the location and depth of channel scour and final HWRP design will be used determine the appropriate locations for in-situ and on-site management of contaminants. All sites at risk for potential exposure from channel scour would be excavated and disposed of off site.

Thresholds of Significance

The following significance criteria were used to evaluate the proposed project. Regarding surface hydrology, the proposed project was identified as resulting in a significant impact on the environment if it would

- violate any water quality standards or waste discharge requirements,
- substantially degrade surface water and/or groundwater quality,
- contaminate a public water supply, or
- substantially increase suspended solids in and turbidity in receiving waters.

Impacts and Mitigation Measures of the Proposed Project

Impact WQ-1: Potential Long-Term Degradation of Surface Water and Sediment Quality from Residual Contamination. As stated in the ROD/RAP, the long-term objectives of the project is to remove or isolate residual contaminants in a manner and to levels that are protective of wetland receptors. The RWQCB, as authorized by the PCWQCA, would adopt site cleanup requirements (SCRs) that will ensure implementation of the final approved ROD/RAP. Through the SCRs, the State will ensure that agreed-upon environmental assurance actions are taken to address residual concentrations of Inboard Area-Wide DDTs and PAHs in soils adjacent to the runway through the imposition of WDRs governing the implementation of the HWRP.

Sites containing residual contaminants above the action goals deemed appropriate for potential wetland receptors would be excavated and disposed of offsite. Residual contamination at certain sites would remain on the site, either under in-situ or on-site management. In addition, as stated in the ROD/RAP, residual contamination above action goals may remain on the site if excavation in the CSM becomes infeasible prior to achieving the action goals. Suspension of excavation of CSM sites prior to achieving action goals for the contaminants of concern would be based on concurrence from the State and the Army that residual contamination would not pose a significant risk to human or ecological health.

Also, in accordance with the ROD/RAP, all sites proposed for in-situ or on-site management, or any sites where action goals cannot be achieved, would require institutional controls in the form of land use restrictions to ensure that future exposure of contaminants to human or environmental receptors does not occur. These controls would require that grading, excavation, and intrusive activities must be conducted pursuant to a State-approved plan, and that the property shall not be used for residences, schools, daycare facilities, hospitals, hospices, or other similar sensitive uses. The HWRP does not envision the use of the site for any of these sensitive uses. In addition, State and federal agencies must have access to the property to carry out response actions or other activities consistent with the purposes of the ROD/RAP. Exposure of residual contamination from channel scour is addressed under Impact WQ-2.

Removal of contaminants in the coastal salt marsh would decrease introduction of contaminants from CSM sites presently. Removal of contaminants in inboard sites and reduction of potential exposure to the environment (through management on-site or in-situ) as proposed in the ROD/RAP are designed to avoid substantial degradation of beneficial uses associated with the future wetland and San Pablo Bay. Adoption of SCRs by RWQCB is the means by which the RWQCB assures that the remediation is protective of these beneficial uses. With the implementation of the ROD/RAP, adoption of SCRs for the ROD/RAP, adoption of WDRs for the HWRP, the implementation of the ROD/RAP and the HWRP are expected to result in a less-than-significant impact related to long-term water quality and sediments.

Impact WQ-2: Potential for Long-term Degradation of Surface Water and Sediment Quality from Exposure of Contaminants by Channel Scour. Many sites of residual contamination are proposed to remain on the property through either in-situ or on-site management strategies. These contaminants would receive 3 feet of stable cover from either dredge materials placed on the site for the HWRP, or other sources of appropriate material. Future development and maturation of the proposed wetland may expose these contaminants as the wetland channels develop and, through tidal action, begin to cut into the sediments on site.

This potential impact is considered less than significant because: (1) the ROD/RAP provides that any site proposed for in-situ management will be addressed through excavation and offsite disposal if, based on the HWRP design and geomorphic and scour analyses, it is determined that the performance standard adopted in the ROD/RAP of 3 feet of stable cover, or equivalent, cannot be achieved; (2) monitoring and adaptive management will be required under the HWRP to ensure that the 3 feet of stable cover, or equivalent, is maintained at each site; and (3) institutional land use controls will be required to ensure that contaminants are not re-exposed.

Similar to in-situ management, areas of excavation for on-site management of DDT and PAH contaminated soils will be determined by the HWRP design and geomorphic and scour analyses. Where residual contamination of site soils exceeds the action goals for DDTs and/or PAHs, and it is determined that the performance criteria cannot be met, the HWRP will, with the concurrence of the State, excavate some or all of the impacted soils and manage them onsite. On-site management would also require monitoring, adaptive management, and institutional controls as part of the HWRP.

Impact WQ-3: Potential for Short-Term Degradation of Surface Water and Sediment Quality from Remediation Activities. As previously described, a number of contaminants are found in sediments/soils to be removed or soils to be relocated on the site and could be exposed to the water column through erosion or direct runoff. SCRs established by the RWQCB would ensure that the environmental actions, as described in the ROD/RAP, are taken to address residual concentrations of contaminants.

Construction actions associated with remediation of the site (e.g., excavation) would be subject to a general NPDES permit. The purpose of the general construction NPDES permit is to protect water quality by preventing discharges to the Waters of the U.S. The permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), as well as monitoring the effectiveness of the SWPPP.

A SWPPP was prepared in 1999 to address storm water management and sampling practices specific to the construction and remediation activities on HAAF. Remedial actions on the site conducted by the Army would be subject to the requirements of this SWPPP. Remedial activities conducted as part of the HWRP would be subject to the WDRs and/or a construction stormwater management permit (99-08-DWQ). As a condition of the permit or the WDRs, Best Management Practices (BMPs) such as the following would be required:

- sediment barriers, including straw bales or silt fences;
- soil stabilization measures, including straw mulching, hydromulching, jute netting, revegetation, chemical soil stabilizers, or preserving existing vegetation;
- runoff controls, including containment areas, runoff diversions or sediment traps; and
- construction practices, including dust control measures and covering soil stockpiles to prevent erosion.

With implementation of the measures in the SWPPP and WDRs, short-term construction effects on water quality are expected to be less than significant.

Impact WQ-4: Potential Degradation of Groundwater Quality. Shallow groundwater on the site is of poor quality and no beneficial uses have been identified by RWQCB. Because of the presence of bay muds at the site, surface water and shallow groundwater are unlikely to recharge deeper groundwater.

The continuous saturated clay and lack of movement of groundwater within the clay would result in limited movement of contaminants. No further action with regard to groundwater is proposed in the ROD/RAP. This impact is considered less than significant.

Section 3.3
Public Health

Environmental Setting

Public health issues related to the proposed project include

- public health risks from exposure to hazardous materials; and
- mosquitoes, which can create a public nuisance and transmit disease to humans.

Potential public health and safety issues related to hazardous materials are analyzed in Section 3.6, "Hazardous Substances and Waste." Mosquito breeding conditions and control measures are described in the 1998 HWRP EIR/EIS. This section describes the potential impacts on public health and safety associated with mosquitoes that may occur with implementation of the proposed project.

Environmental Impacts and Mitigation Measures

Impact Mechanisms

Impact mechanisms include the creation of mosquito breeding habitat through ponding of water in depressions created during the excavation of contaminated soils.

Thresholds of Significance

The project would be considered to have a significant impact if habitat changes would necessitate increasing mosquito abatement programs to maintain mosquito populations at preproject levels.

Impacts and Mitigation Measures of the Proposed Project

Impact PH-1: Increase of Potential Mosquito Breeding Habitat. During construction, surface water may pond in depressions created in portions of the project area as a result of excavation activities. The excavated areas would be relatively small compared to existing breeding habitat and would not be likely to result in a substantial increase in mosquito production. The excavated areas would also mostly be backfilled, which would eliminate the potential to create breeding habitat. This impact is considered *less than significant* and no mitigation is necessary.

Section 3.4
Biological Resources

Introduction and Data Sources

Biological resources evaluated for the proposed project include native and non-native aquatic and terrestrial habitats, special-status communities, and special-status plant and animal species. This section describes existing biological resources present and potential impacts on these resources that may occur with implementation of the proposed project. The habitats present at the HAAF site were described in the 1998 EIS/EIR and are summarized below. No new surveys for biological resources were conducted for this subsequent EIR. However, information presented in the 1998 document was updated with data from recent environmental documents and surveys, including

- *Final Supplemental Environmental Impact Report/Statement for Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project*, prepared by Jones & Stokes for the California State Coastal Conservancy and the U.S. Army Corps of Engineers, April 2003;
- a 2003 search of the California Natural Diversity Database (DFG 2003);
- *Draft Final Environmental Baseline Survey Main BRAC Property Hamilton Airfield*, prepared by CH2M Hill for the U.S. Army Corps of Engineers, March 2002;
- *Biological Assessment for Hamilton Army Airfield BRAC Property, North Antenna Field, and Hamilton Restoration Project*, prepared by Department of Army Forces Command and others, April 2002; and
- various other survey results, including a bat survey (LSA 1997a), California clapper rail and California black rail survey (LSA 1997a), red-legged frog survey (LSA 1997b), and a burrowing owl study (LSA 1997c).

Environmental Setting

Biological Communities

Subtidal aquatic, intertidal, wetland, and grassland communities and developed areas are the habitats present in the HAAF. These habitats and the associated plant and wildlife species are described below. The distribution of habitat types within each area is presented in Figure 3.4-1. Habitat types and acreages are derived from the results of previous habitat inventories of the project area.

Aquatic Communities

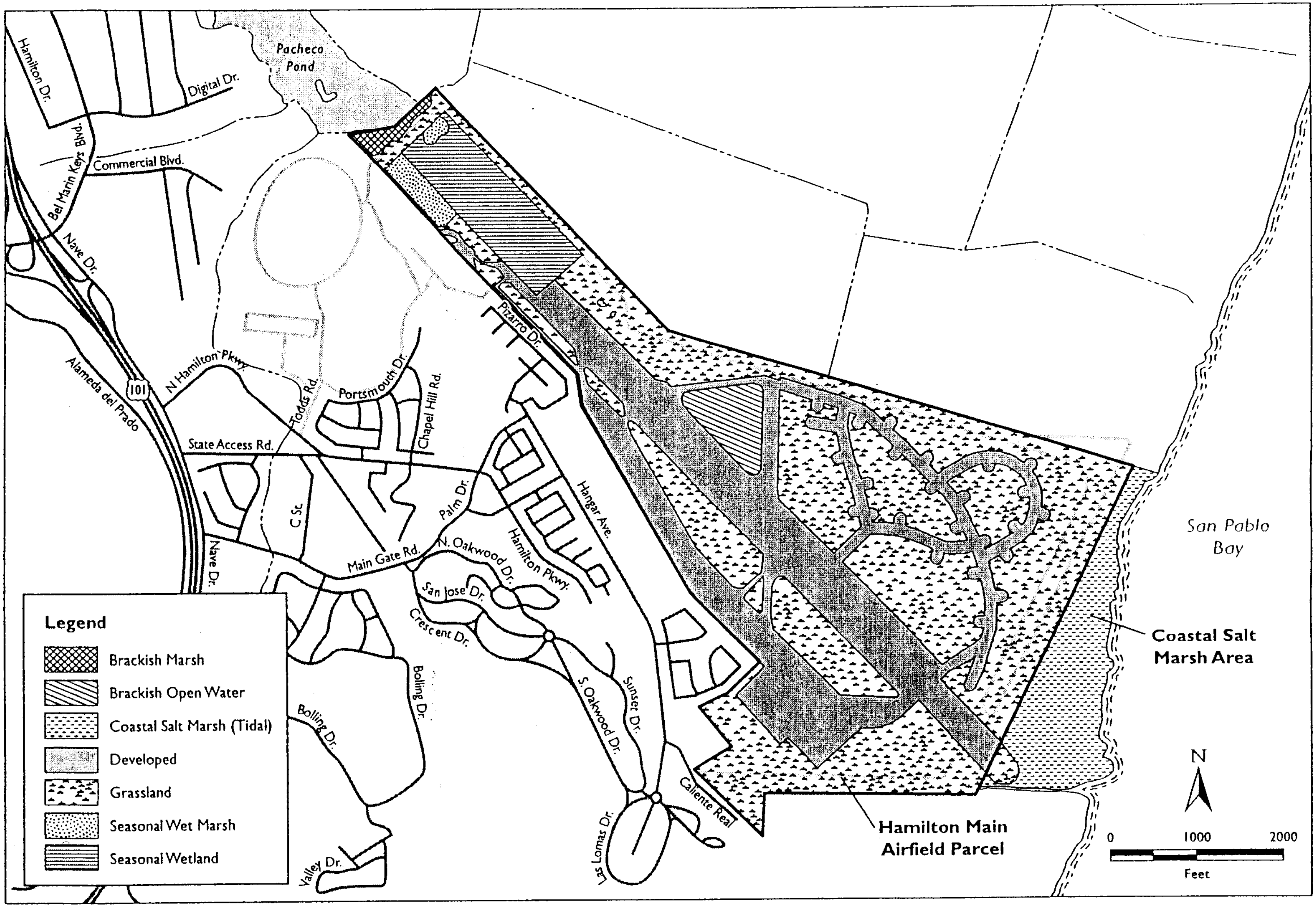
Aquatic communities include subtidal (aquatic habitats that are never exposed during low tide) and intertidal (emergent marsh habitat and mudflats that are exposed during low tides). Each of these is described below.

Subtidal Aquatic Habitat. Subtidal aquatic habitats are areas of continuous open water that are submerged during even the lowest tide. As a result, these areas are too deep to support the types of vegetation found in emergent (occasionally exposed) marsh habitat. Phytoplankton; zooplankton; and fish such as longfin smelt, northern anchovy, speckled sanddab, and staghorn sculpin occupy subtidal aquatic habitat. Benthic organisms such as worms and clams can be found in the sandy, muddy bottom. Many species of waterfowl and diving birds use subtidal aquatic habitat for feeding areas.

Intertidal Aquatic Habitat. Intertidal aquatic habitat comprises two subtypes of habitat, intertidal mudflats and coastal salt marsh.

Intertidal mudflats are composed of unconsolidated, muddy bottom areas without vegetation and are present along the bay side of coastal salt marshes that are outboard (on the bay side) of the perimeter levee. Mudflats are exposed twice daily during low tide and extend to the extreme low water elevation. Narrow bands of mudflat are also found at the same elevations along the margins of subtidal channels in tidal marshes. Mudflats are highly productive and support large populations of benthic (bottom-feeding) organisms, including aquatic worms, crustaceans, and mollusks that are important elements of the estuarine foodweb. When exposed or covered by shallow water, mudflats provide important foraging areas for migrant and wintering shorebirds, wading birds, and gulls.

Coastal salt marsh contains persistent, rooted herbaceous vegetation dominated by cordgrass and pickleweed. The vegetation in the marsh habitat is used as direct cover and sources of food by rearing juvenile and adult fish such as longfin smelt, chinook salmon, and steelhead. Because emergent marsh habitat is within the tidal zone, it drains frequently and therefore is not used for spawning. Benthic organisms use this habitat in the same way they use intertidal mudflats. Emergent marsh habitat also provides nesting, foraging, and escape cover for various songbirds and wading birds.



Jones & Stokes

Figure 3.4-1
Habitat Types

Wetland Communities

Five types of wetland communities are present in the project area: coastal salt marsh (tidal), coastal salt marsh (nontidal), brackish marsh, brackish open water, and seasonal wetland. All of these wetland types except brackish open water are considered jurisdictional wetlands by the U.S. Army Corps of Engineers in accordance with the federal Clean Water Act and as sensitive natural communities by the California Department of Fish and Game (DFG).

Boundaries of wetland communities in the HAAF parcel were established during a delineation of potential jurisdictional wetlands in 1991 (Jones & Stokes Associates 1991). The delineation was initially verified by the San Francisco District of the U.S. Army Corps of Engineers in 1992 and, following its expiration, was reverified (U.S. Army Corps of Engineers 1996). Since the initial delineation, a 12.4-acre jurisdictional seasonal wetland was constructed on the site as mitigation for wetlands affected by the Landfill 26 closure project.

Coastal Salt Marsh (Tidal). Coastal salt marsh under tidal influence is located between the levee at the eastern end of the project area and the open water of San Pablo Bay. This habitat can be divided into three distinct zones based on the frequency and duration of tidal inundation.

- Low marsh occupies the elevations between mean tide level and mean high water and, as such, is inundated daily. Low marsh is adjacent to the open waters of San Pablo Bay and is dominated by California cordgrass.
- Middle marsh habitat occupies the elevations between mean high water and mean higher high water and is dominated by common pickleweed. Middle marsh is predominant outboard of the perimeter levee and is inundated frequently throughout each month, although for shorter periods than low marsh.
- High transitional marsh habitat occupies the elevations between mean higher high water and the highest tide level; this habitat is inundated infrequently and for brief periods. A narrow strip along the bayside of the levee supports high marsh and supports plant species that are tolerant of saline conditions but not adapted to frequent, long-term inundation, including saltgrass, alkali heath, fat-hen saltplant, and gumplant.

The tidal salt marsh community provides food, cover, and breeding habitat for many wetland-dependent wildlife species. The dense vegetation and large invertebrate populations typically associated with salt marshes provide ideal nesting and foraging conditions for a variety of bird species, including rails, egrets, herons, waterfowl, and shorebirds. In addition to being important habitat for wetland-associated wildlife, the salt marsh community is also a crucial component of the San Pablo Bay ecosystem, providing nutrients and organic matter to the mudflats and open water of the bay. These, in turn, are important habitats for a variety of waterfowl, shorebirds, and other water birds. Wildlife species observed in and surrounding the HAAF parcel during field surveys conducted in 1994 include double-crested cormorant, great blue heron, great egret, American coot, killdeer, northern harrier, and San Pablo song sparrow. Other species expected to use tidal salt marsh include the raccoon, mallard, sora, Virginia rail, and willet (May & Associates 2001, Jones & Stokes 2002).

Brackish Marsh. Brackish marsh occurs at the northwestern end of the HAAF parcel and along portions of the perimeter drainage ditch. Dominant emergent wetland plants along drainage ditches are alkali bulrush and cattail. Because marsh vegetation associated with ditches occurs in narrow linear bands, these habitat areas typically support a lower diversity of wildlife than do larger, more contiguous units of brackish marsh. Drainage ditch banks and channels also provide foraging habitat and cover for some species, such as herons, egrets, and dabbling ducks, and movement corridors for striped skunks, raccoons, and other species. Common species observed using the HAAF perimeter ditch include the threespine stickleback, mosquito fish, and red-winged blackbird.

Brackish Open Water Habitat. Approximately 13 acres of brackish open water habitat was created by excavation of the Landfill 26 cap borrow pit in the HAAF parcel. Water depth in the pit averages about 4 feet and pit margins support relatively little vegetation. The pit pond provides relatively low-quality wildlife habitat because water depth is marginal for the establishment of emergent vegetation, which provides cover and foraging areas for many wetland-associated species. The pit pond, however, provides suitable resting habitat for waterfowl and other water birds.

Seasonal Wetland. The HAAF parcel includes a 12.4-acre seasonal wetland created as mitigation for the Landfill 26 closure project. Per the 1998 EIS/EIR, this wetland is not considered jurisdictional by the U.S. Army Corps of Engineers. Plant species that may dominate in seasonal wetland habitat are saltgrass, alkali heath, salt marsh bulrush, fat-hen saltplant, western goldenrod, sheep sorrel, six-weeks fescue, tall fescue, sedge, rush, and creeping wildrye.

Seasonal wetlands in the HAAF parcel are considered low-quality habitat for wildlife, however, because they occur as small, scattered areas, pond water for only a short duration, and provide little cover for wildlife. Consequently, these habitat areas do not have sufficient continuous acreage to meet the breeding and foraging habitat needs of many wetland-dependent wildlife species.

Grassland Communities

Two types of grassland communities, fescue grassland and annual grassland, are present in the project area.

Annual grassland vegetation in the project site is ruderal (grows in disturbed areas) and dominated by weedy non-native annual grasses and forbs, such as ripgut brome, wild oats, Mediterranean barley, perennial ryegrass, yellow star-thistle, curly dock, bristly ox-tongue, and black mustard.

Fescue grassland is found mostly in low areas around the southeastern and northwestern margins of the airfield in the HAAF parcel. Vegetation in the fescue grassland is dominated by tall fescue, a non-native, perennial bunchgrass, in association with annual grassland species. Scattered shrubs and non-native trees are also present in some grassland areas.

Common wildlife species that may utilize grassland habitat on-site include the gopher snake, western fence lizard, turkey vulture, red-tailed hawk, American kestrel, California quail, ring-necked pheasant, savannah sparrow, western meadowlark, Brewer's blackbird, California vole, black-tailed hare, desert cottontail, California ground squirrel, black-tailed deer, coyote, striped skunk, and raccoon.

Developed Areas

Developed areas on-site include hangars, buildings, drainage pump stations, utility infrastructure, antenna installations, aboveground fuel tanks and fuel lines, and paved runway and revetment areas. Developed areas support a low diversity of wildlife compared to vegetated habitats. Species commonly associated with developed areas include the barn swallow, northern mockingbird, American crow, and European starling.

Special-Status Species

Special-status species are plants and animals that are legally protected under the state and federal Endangered Species Acts or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants and animals are species in the following categories:

- species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]);
- species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 7596-7613, February 28, 1996);
- species listed or candidates for listing by the State of California as threatened or endangered under the state Endangered Species Act (14 California Code of Regulations 670.5);
- species that meet the definitions of rare, threatened or endangered under CEQA (State CEQA Guidelines, Section 15380);
- plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);

- plants considered by the California Native Plant Society to be rare, threatened, or endangered in California (Lists 1B and 2 in Skinner and Pavlik 1994);
- plants listed by the California Native Plant Society as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in Skinner and Pavlik 1994), which may be included as special-status species on the basis of local significance or recent biological information;
- animal species of special concern to DFG (Remsen 1978 [birds], Williams 1986 [mammals], Jennings and Hayes 1994 [amphibians and reptiles], and Moyle et al. 1995 [fish]); and
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

A detailed listing of special-status plant and animal species that occur or have potential to occur in or near the project site and their likely status in these areas is presented in Appendix D.

Plants

Fourteen special-status plant species have potential to occur in or near the project area; however, they are not known to be present on-site (see Table D-1 in Appendix D). Potentially suitable habitat is present for only three of those species: soft bird's-beak, Point Reyes bird's-beak, and Marin knotweed (Environmental Science Associates 1993). Potential habitat for these species is associated with the transitional zone at the upper margins of coastal salt marshes. These species were not found during rare-plant surveys conducted in the HAAF parcel in 1993 (Environmental Science Associates 1993). This potential habitat is associated with the transitional zone at the upper margins of the coastal salt marsh area.

Wildlife

Five special-status fish and 14 special-status wildlife species are known to occur or are assumed to use suitable habitat within diked portions of the project sites or in marshes and aquatic habitats bayside of the perimeter levees, including

- longfin smelt,
- Central Valley steelhead,
- chinook salmon,
- coho salmon,
- Sacramento splittail,
- double-crested cormorant,

- California brown pelican,
- California clapper rail,
- California black rail,
- northern harrier,
- burrowing owl,
- saltmarsh common yellowthroat,
- San Pablo song sparrow,
- salt marsh harvest mouse,
- white-tailed kite,
- golden eagle,
- peregrine falcon,
- short-eared owl, and
- pallid bat.

The state and federal status, habitats, distribution in California, and occurrence (or potential to occur) are presented in Table D-2 in Appendix D. This list was derived from the sources noted at the beginning of this section as well as the result of several recent surveys which are summarized below:

- **California Clapper Rail Surveys: HAAF and Antenna Field** (LSA 1998). LSA Associates conducted studies in 1998 to determine the presence or absence of clapper rails in the HAAF and Antenna Field properties during the breeding season for the species, and to map approximate location used by individuals and pairs. Surveys were conducted during March and April 1998, during which time both clapper rails and black rails were consistently observed on the HAAF site. The rails were observed primarily in areas where the tidal marsh habitat is widest.
- **California Red-Legged Frog Survey: Hamilton Army Airfield** (LSA 1997b). LSA Associates conducted studies in 1997 to determine the presence or absence of the California red-legged frog on the HAAF site and vicinity. While the HAAF airfield parcel contains several areas of potentially suitable habitat for the species, no red-legged frogs were observed in these areas or in adjacent suitable habitat areas surveyed.
- **Burrowing Owl Survey and Relocation** (LSA 1997c). Surveys of HAAF by LSA in 1997 found burrowing owls on the site. These owls were relocated in accordance with DFG protocols, prior to previous site activity. However, owls may have recolonized the HAAF airfield parcel subsequent to the relocation and are considered potentially present on the site.
- **Bat Survey** (LSA 1997a). LSA Associates performed surveys for bats at five HAAF buildings (B-831, B832/836, B833, B510, and B521) identified for demolition. The search focused on two special-status species, the pallid bat (*Antrozous pallidus pacificus*) and Townsend's big-eared bat

(*Corynorhinus townsendii pallescens*). Both are California special concern species. Surveys were conducted visually for bats and bat sign between 4:00 PM and 10:00 PM on March 25, 1997. An ultrasonic sound detector was also used to detect bat vocalizations. Other common bats were observed, including *Myotis* sp. and big brown bats (*Eptesicus fuscus*), but the buildings were considered unlikely habitat for the special concern species.

No adverse effects on the other special-status species other than those noted above are expected because either (1) they are not likely to occur in the project area due to lack of suitable habitat, (2) there are no known occurrences near the project area, and/or (3) surveys for certain species determined they were not found in the project area. A more detailed description of the species considered during this assessment and their habitat requirements is presented in Appendix D.

Environmental Impacts and Mitigation Measures

Thresholds of Significance

The project is considered to have a significant impact on biological resources if it would

- decrease the acreage or quality of intertidal and subtidal aquatic habitats,
- decrease the acreage or quality of tidal or nontidal wetlands,
- substantially decrease the acreage or quality of waterfowl breeding or wintering habitat,
- substantially decrease the acreage or quality of migrant and wintering shorebird habitat, or
- result in the permanent loss of occupied special-status species habitat or result in the direct mortality of individual special-status species.

Impacts and Mitigation Measures of the Proposed Project

Impact BIO-1: Loss of Tidal Coastal Salt Marsh. Remediation activities may result in the temporary loss of approximately 6 acres and the permanent loss of approximately 0.3 acre of high, middle, and low tidal coastal salt marsh. The ROD/RAP would be implemented to facilitate implementation of the HWRP, which would in turn create an estimated 485 acres of coastal salt marsh on the HAAF parcel. Thus the loss of coastal salt marsh under the ROD/RAP would be indirectly offset by restoration of habitat under the HWRP. Nevertheless, loss of coastal salt marsh under the ROD/RAP is considered a significant impact. To reduce this impact to a less-than-significant level, the following Mitigation Measure BIO-1 will be implemented.

Mitigation Measure BIO-1: Monitor Site Development and Implement Actions to Increase the Rate of Marsh Development if Required. In accordance with the ROD/RAP, all areas of coastal salt marsh disturbance, except those in the area of the proposed channel cut, will be backfilled with suitable on-site or rehandled dredge materials and recontoured to promote reestablishment of native vegetation. Disturbed areas in the coastal salt marsh are expected to naturally revegetate. To ensure these sites are successfully re-colonized, a mitigation monitoring plan for the coastal salt marsh will be developed and implemented. Restored coastal salt marsh will be monitored annually for 5 years. The monitoring program will be designed to determine if coastal tidal marsh is developing and its primary supporting physical processes are occurring (i.e., tidal exchange and sedimentation). Adaptive management measures, if determined necessary by monitoring, may include additional backfill, seeding or manual revegetation, or other measures necessary to promote development of the marsh.

Impact BIO-2: Temporary Disturbance to Special-Status Birds Occupying Coastal Salt Marsh Habitat. Noise, vibration, visual, and proximity-related disturbances associated with proposed remediation could adversely affect the northern harrier, California black rail, California clapper rail, saltmarsh common yellowthroat, and San Pablo song sparrow during the breeding season. If individuals of these species nest in the project area while remediation activities are being conducted, construction disturbances could cause individuals to abandon their nests or young; the breeding success of these species could be reduced if disturbances reduce the ability of adults to properly care for their eggs or young. Nests with eggs or young birds could also be crushed by remediation activities in the outboard tidal marsh, or young birds could be crushed by construction equipment or inundated or toppled by tidal flow.

This impact is considered significant because project activities could result in the disturbance and possible mortality of special-status species. This impact will be reduced to a less-than-significant level through project-wide minimization and avoidance measures described in the ROD/RAP. Construction activities will be avoided during the clapper rail breeding period (February 1 through August 31); this season also encompasses the breeding season of other special-status birds that may be present in the coastal salt marsh. If construction activities cannot be avoided during the clapper rail breeding period, Mitigation Measure BIO-2 will be implemented.

Mitigation Measure BIO-2: Conduct Preconstruction Surveys to Locate Northern Harrier, California Black Rail, California Clapper Rail, Saltmarsh Common Yellowthroat, and San Pablo Song Sparrow Nest Sites before Remediation Activities Are Initiated. Preconstruction surveys, as proposed in the ROD/RAP, will be conducted in the spring of each construction year to locate northern harrier, California black rail, California clapper rail, saltmarsh common yellowthroat, and San Pablo song sparrow nest sites in suitable breeding habitats. Surveys will be conducted by a qualified biologist using survey methods approved by DFG and the U.S. Fish and Wildlife Service (USFWS). Survey results will be submitted to DFG and USFWS before construction is initiated. If nests or young are not located within 250 feet of the limits of construction, construction may proceed. If nest sites or young are located, a buffer around active nest sites will be established or construction activities will be sequenced to avoid potential impacts on the species during the breeding season. DFG and/or USFWS will be consulted to identify any further mitigation measures necessary to avoid disturbance or potential mortality of special-status species.

Impact BIO-3: Potential for Direct Mortality of Salt Marsh Harvest Mice during Remediation-Related Ground Disturbance. Excavation and backfill being placed in coastal salt marsh habitat could result in the direct mortality of salt marsh harvest mouse, a federally listed and state-listed endangered species. Project-wide minimization and avoidance measures described in the ROD/RAP, which include installation of barrier exclusion fencing to impede salt marsh harvest mice from entering construction areas, would be implemented. This impact is considered a significant impact to the salt marsh harvest mice. To reduce potential for mortality, Mitigation Measure BIO-3 will be implemented.

Mitigation Measure BIO-3: Remove Salt-Marsh Harvest Mouse Habitat and Install Barrier Fencing. The potential for construction-related mortality of salt marsh harvest mice could be reduced or eliminated by hand-removal of pickleweed and subsequent placement of a barrier fence 20 feet from the boundaries of construction areas in and adjacent to coastal salt marsh habitat. As the salt marsh harvest mouse is a fully protected and listed state species and a listed federal species, USFWS and DFG will be consulted to evaluate these and any other appropriate methods for avoiding construction-related mortality of salt marsh harvest mouse.

Impact BIO-4: Temporary Disturbance to Special-Status Birds That Occupy Brackish Marsh Habitat. Noise, vibration, visual, and proximity-related disturbances associated with proposed remediation could adversely affect special-status wildlife that nest in brackish marsh habitat. Species such as California black rail, short-eared owl, osprey, northern harrier, and saltmarsh common yellowthroat will nest in this habitat type. If individuals of these species nest in the project area while remediation activities are being conducted, construction disturbances could cause individuals of these species to abandon their nests or young; the breeding success of these species could be reduced if disturbances reduce the ability of adults to properly care for their eggs or young. Operation of construction equipment in or immediately adjacent to marsh vegetation and discharge of construction-generated sediments into the marsh could also result in the loss or degradation of the habitat.

This potential loss is considered a significant impact. To reduce this impact to a less-than-significant level, Mitigation Measure BIO-4 will be implemented.

Mitigation Measure BIO-4: Conduct Preconstruction Surveys to Locate California Black Rail, Short-Eared Owl, Osprey, Northern Harrier, and Saltmarsh Common Yellowthroat Nest Sites before Remediation Activities Are Initiated. Preconstruction surveys to locate California black rail, short-eared owl, osprey, northern harrier, and saltmarsh common yellowthroat nest sites in suitable breeding habitats will be conducted in the spring of each construction year. Surveys will be conducted by a qualified biologist using survey methods approved by DFG and USFWS. Survey results will be submitted to DFG and USFWS before construction is initiated. If nests or young are not located within 250 feet of the limits of construction, construction may proceed. If nest sites or young are located, a buffer around active nest sites will be established or construction activities will be sequenced to avoid potential impacts on the species during the breeding season. DFG and/or USFWS will be consulted to identify any further mitigation measures necessary to avoid disturbance or potential mortality of special-status species.

Impact BIO-5: Potential for Mortality of Burrowing Owls. Operating equipment in grasslands west of the perimeter levee and introducing tidal flow could result in direct mortality of burrowing owls. Occupied nesting burrows could be crushed or buried by construction equipment or inundated as a result of tidal flow. This impact is considered significant because it could result in the direct mortality of individuals of this special-status species. To reduce this impact to a less-than-significant level, Mitigation Measure BIO-5 will be implemented.

Mitigation Measure BIO-5: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures To Avoid or Minimize Adverse Effects if Owls Are Present. Preconstruction surveys for western burrowing owls will be conducted by a qualified ornithologist before any development within the habitat identified as suitable for nesting or wintering burrowing owls. These surveys, which will include any potentially suitable habitat within 250 feet of construction areas, will be conducted no more than 30 days before the start of remediation, regardless of the time of year in which the activity occurs.

If breeding owls are located on or immediately adjacent to the site, a construction-free buffer zone (typically 250 feet) around the active burrow must be established as determined by the ornithologist in consultation with DFG. No activities, including grading or other construction work or relocation of owls, would proceed that may disturb breeding owls.

If owls are resident within 250 feet of the project area during the nonbreeding season a qualified ornithologist, in consultation with DFG, will passively relocate (evict) the owls to avoid the loss of any individuals if the owls are close enough to areas affected by the proposed alternatives that they or their burrows could potentially be harmed by associated activities.

Impact BIO-6: Disturbance of Roosting and Foraging Habitat for Special-Status Bat Species. Special-status bat species may roost and forage in and around abandoned structures within the project area. Construction activities at or near these locations would include disturbance from noise and human presence. This temporary disturbance to potential special-status bat species is considered significant; however, implementation of Mitigation Measure BIO-6 would reduce this impact to less than significant.

Mitigation Measure BIO-6: Conduct Preconstruction Bat Survey in Suitable Habitat. A qualified biologist will conduct a preconstruction survey to determine occupancy by roosting special-status bats. If it is determined that bats are roosting in the project area, then appropriate modifications to construction time and method will be implemented. Modifications may include timing construction activities to avoid breeding periods, establishment of buffers, or biological monitoring. In some cases bats may be actively encouraged to avoid roosting in the area affected by the remediation before the onset of construction activities.

Impact BIO-7: Temporary Disturbance of Fish in San Pablo Bay during Construction. Proposed and listed fish potentially use tidal channels found within the borders of the coastal salt marsh adjacent to Hamilton. Potentially adverse direct effects to fish could include a take through direct physical contact with machinery, exposure to hazardous chemicals, and changes in physical and chemical conditions (e.g., dissolved oxygen, salinity, etc.). In accordance with the ROD/RAP project-wide minimization and avoidance measures, fish barriers would be placed at waterways that are connected to excavation sites. Implementation of this minimization and avoidance measure will reduce the described effects to a less-than-significant level.

Section 3.5

Land Use and Public Utilities

Environmental Setting

Regulatory Setting

Novato General Plan

The Novato General Plan is a comprehensive, long-range planning document that identifies the city's land use, transportation, environmental, economic, fiscal, and social goals and policies as they relate to the conservation and development of land in Novato. The general plan was adopted in March 1996.

The general plan designates the Hamilton main airfield parcel and coastal salt marsh areas as open space and defines the uses, such as natural resource preservation, outdoor recreation, floodways and flood control, and the maintenance of public health and safety, that are consistent with the planned wetland restoration.

Marin Countywide Plan

The Marin Countywide Plan is a long-range comprehensive plan that governs growth and development in the unincorporated areas of the county. The Marin Countywide Plan designates the adjacent land use on the adjacent BMKV parcel as agriculture and conservation with a permitted residential use of 1 unit per 2-10 acres.

Bay Trail Plan

The Association of Bay Area Governments (ABAG) developed the Bay Trail Plan (Association of Bay Area Governments 1989) as a framework for the implementation of the Bay Trail project. The Bay Trail is a planned recreation corridor that will provide approximately 400 miles (640 kilometers) of biking and hiking trails around the Bay and its surrounding lands when it is complete.

The City of Novato general plan includes the following program policy regarding the Bay Trail:

> Work with the Marin County Open Space District and ABAG to implement the trail system described in the Marin Countywide Plan and the Bay Trail Plan (City of Novato 1996).

The Bay Trail previously proposed a trail alignment along the levee north of the main airfield parcel but this alignment was precluded by the HWRP. Alternative alignments were evaluated in Hamilton Public Access Bay Trail Plan (Conservancy and City of Novato 2001). This study developed a preferred trail alignment that follows the eastern edge of the main airfield parcel, extends along the levee between the main airfield parcel and Pacheco Pond, and continues northwest along the edge of Pacheco Pond (Figure 3.5-1). This alignment was adopted by the City Council as an amendment to the City of Novato General Plan on June 11, 2002.

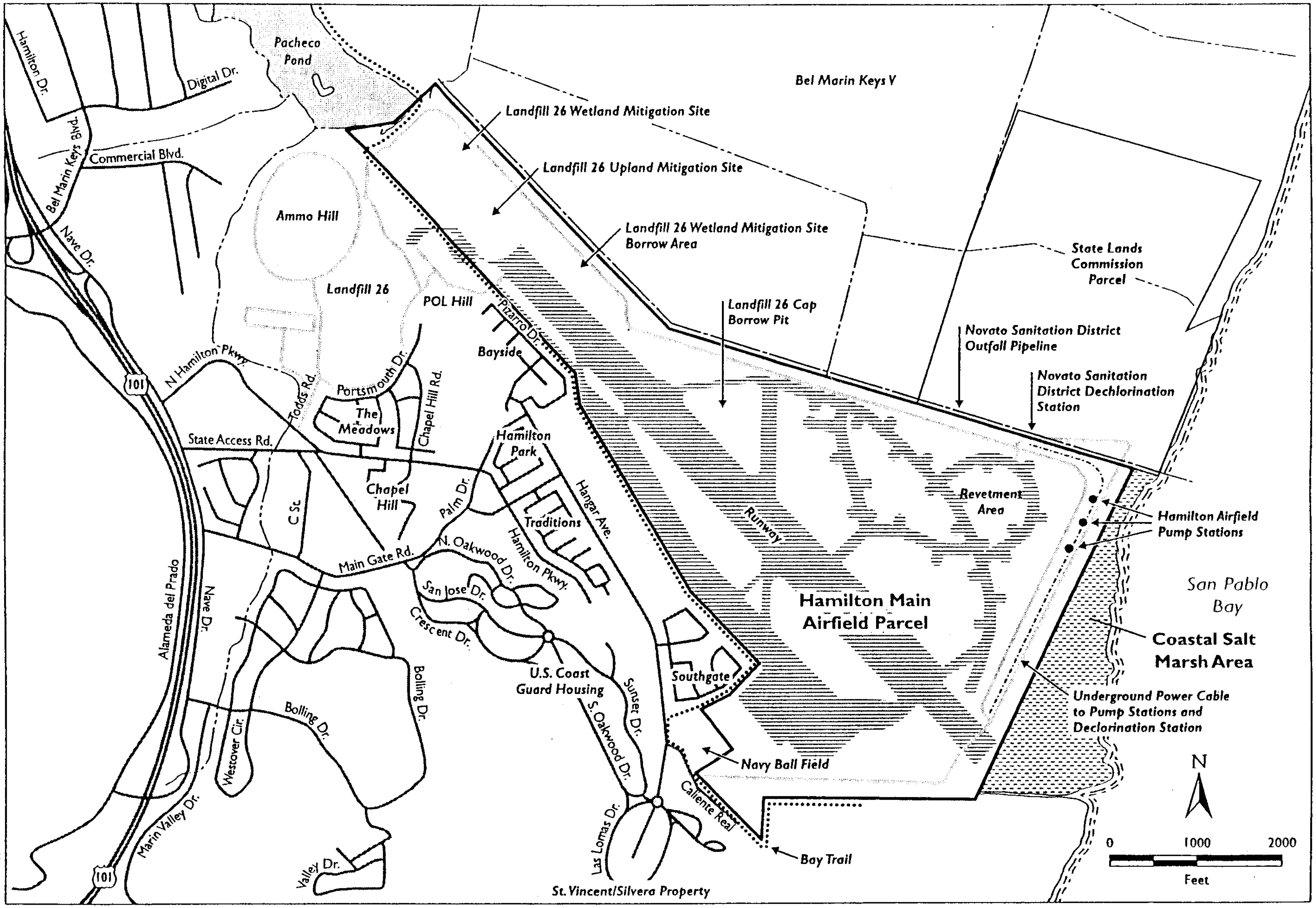
San Francisco Bay Plan

BCDC's San Francisco Bay Plan was prepared to guide the future protection and use of San Francisco Bay and its shoreline. The San Francisco Bay Plan identifies the Inboard Site and coastal salt marsh area as high-priority areas for wildlife use. The plan was amended (Bay Plan Amendment No. 1-95) to change the airport priority use designation and policy note for the former Hamilton main airfield parcel. The plan contains the following policy:

> Develop comprehensive wetlands habitat plan and long-term management program for restoring and enhancing wetlands habitat in diked former tidal wetlands. Dredged materials should be used whenever feasible and environmentally acceptable to facilitate wetlands restoration.

Land Uses, Utilities, and Easements at the Project Site

Existing land uses, utilities, and easements at the project site are described below and identified in Figure 3.5-1.



Jones & Stokes

Figure 3.5-1
Land Uses and Utilities in the Project Area

Hamilton Main Airfield Parcel

Land Uses. The Hamilton main airfield parcel includes a runway (approximately 8,000 feet long) that is no longer used, aprons, taxiways, the revetment area (airplane parking pads), and other miscellaneous structures. The revetment area is located in the northeastern corner of the Hamilton main airfield parcel and is transected by concrete-paved taxiways that connect 28 circular revetment turnouts.

Three features associated with Landfill 26 are within the Hamilton main airfield parcel: a wetland mitigation site, a borrow area, and a borrow pit. The 12.4-acre wetland mitigation site is located on the runway at the northwest end of the parcel and was constructed to replace seasonal wetlands lost during capping of Landfill 26. The borrow area is southeast of the wetland mitigation site and was excavated to provide fill for the site. The 13-acre borrow pit is also southeast of the wetland mitigation site and is a deep, triangular excavation from which material was taken to cap Landfill 26.

Utilities. A drainage ditch runs along most of the perimeter levees except for the levee that separates the New Hamilton Partnership property from the Hamilton main airfield parcel. Subdrainage pipes were installed at the Hamilton main airfield parcel to assist in lowering the water table, and those pipes discharge to the perimeter drainage ditch.

Two pump stations operated by the Army are located near the northeastern corner of the Hamilton main airfield parcel and discharge drainage from the perimeter ditch to the outboard tidal marsh. The third pump station in the same area was demolished and removed in 2001. The pump stations include pumps, piping, and associated equipment. Pipes from adjacent properties also lead into the perimeter drainage system. Additional information regarding drainage facilities at the project site is provided in the "Water Resources" section of this chapter.

Pacific Gas and Electric Company (PG&E) provides electrical power to the Hamilton main airfield parcel by means of a 60-kilovolt line from PG&E's substation and a small substation located west of the main airfield parcel on the former HAAF property. Power for the NSD dechlorination plant is provided by this system. An underground power line runs from a transformer at the HAAF pump stations along the inboard side of the levee to NSD's dechlorination plant in the SLC parcel. The dechlorination plant is planned to be relocated further to the west to avoid incompatibilities between the facility and the planned wetland restoration.

Easements and Requirements. The Army has identified three easements on the Hamilton main airfield parcel:

- Under Public Law 102-396, the New Hamilton Partnership holds an easement across the western edge of the Hamilton main airfield parcel to maintain the flood control levee that separates the Hamilton main airfield parcel from the New Hamilton Partnership development.

- The SLC has an access easement across the Hamilton main airfield parcel to maintain access to the SLC parcel. Although no official map of the easement exists, it is described as a 40-foot easement that extends from the entrance to the former Hamilton Air Force Base on Nave Drive to the SLC parcel. The easement follows existing roads.
- The NSD has an existing right of entry across HAAF to the dechlorination plant and associated facilities in the SLC parcel.

As described earlier, the Army has created a wetland mitigation site at the northern end of the airfield as compensation for the loss of wetlands that resulted during the capping of Landfill 26. The Army has indicated that the continued operation and maintenance of the wetland mitigation site would be a requirement of property transfer.

State Lands Commission

The SLC owns approximately 78 acres of property east of the main levee and adjacent to San Pablo Bay where remedial actions are proposed as part of the ROD/RAP. This area is coastal salt marsh containing mostly pickleweed and includes three perched ponds, outfall ditches associated with the FSTP and PDD, an abandoned portion the offshore fuel supply line, and a historic sewage outfall pipeline. The HWRP hydraulic off-loader pipeline also crosses this area to access the main airfield parcel.

Land Uses Adjacent or Near the Project Site

State Lands Commission Parcel

The SLC parcel (also known as the North Antenna Field) is located immediately north of the main airfield parcel and coastal salt marsh area (Figure 3.5-1). The area that now makes up the SLC parcel was owned by the Air Force and was operated as part of HAAF until 1974. While the base was active, the parcel supported a variety of uses, including a rifle range, a pistol range, and antenna facilities. It was also used at various times for skeet shooting and firefighter training. Some infrastructure related to military uses remains onsite. When HAAF was decommissioned, the State of California acquired the parcel and leased a portion of the rifle range to the City of Novato for police small-arms training (California State Coastal Conservancy and U.S. Army Corps of Engineers 1998). Antennas and associated cables are also located in the area. Other facilities at the site include aboveground fuel tanks, transformers, target-practice ranges previously used by the Novato Police Department, and burn pits.

The City of Novato General Plan designates the SLC parcel as open space. It describes open space uses as "publicly-owned land that is largely unimproved and devoted to the preservation of natural resources, outdoor recreation, floodways and flood control, and the maintenance of public health and safety." The allowable uses within this land use category include uses devoted to the preservation of natural resources.

Bel Marin Keys Unit V Parcel

The BMKV parcel is a 1,610-acre parcel immediately north of the main airfield parcel that has been diked and used for agriculture (Figure 3.5-1). The BMKV parcel is currently being considered for restoration of wetland habitat as part of the HWRP.

Bel Marin Keys Residential Community

The marina residential area of Bel Marin Keys (BMK) is located north of the project area and includes approximately 700 single-family homes located along two managed lagoons connected to Novato Creek by two locks. The lagoons provide opportunities for recreational water sports and berthing for private watercraft. The south lagoon is contained by a levee located on property now owned by the Conservancy. Part of the south lagoon channel and the lock structure is also on lands owned by the Conservancy.

Pacheco Pond

Pacheco Pond is immediately northwest of the Hamilton main airfield parcel (Figure 3.5-1). This 120-acre site is a flood control reservoir that was constructed by the developer of the Ignacio Business Park and was deeded to Marin County Flood Control and Water Conservation District (MCFCWCD) as a detention basin for flows from Pacheco Creek and Arroyo San Jose. Water from Pacheco Pond is currently discharged to Novato Creek. The Ignacio Business Park, which is a mixed-use office/light industrial/commercial development, is located west of Pacheco Pond.

City of Novato (Ammo Hill)

Ammo Hill, located at the northwest corner of the main airfield parcel and adjacent to Pacheco Pond, is the site of a number of former Army munitions bunkers. The Ammo Hill area was transferred to the City of Novato as part of the Army/GSA Sale Parcel.

Landfill 26

Landfill 26, located west of the northern end of the main airfield parcel, is a former military landfill used for refuse disposal from the 1940s to the 1970s. Although there are no records of disposal at the landfill, the landfill reportedly received approximately 150,000 cubic yards of primarily solid wastes, including both hazardous and non-hazardous substances, and approximately 26,000 cubic yards of oily sludge. Chemical contaminants identified in soil borings consist of volatile and semi-volatile organics, petroleum hydrocarbons, pesticides, PCBs, and metals. (RWQCB 2001)

Between 1994 and 1995, a Resource Conservation and Recovery Act (RCRA)-type landfill cap was installed. Groundwater has been monitored at the landfill since 1993 in accordance with RWQCB waste discharge requirements. Concentrations and groundwater elevation trends are well established for the landfill. Contaminant concentrations in groundwater have not varied significantly since 1993. Previous investigations concluded that Landfill 26 had an impact on groundwater and possibly surface water and sediment, but that these impacts were not found outside the Landfill 26 boundary. In 1993, a groundwater treatment system for Landfill 26 was constructed in a low-lying area that was partially paved. This building currently is not in operation. Methane venting has also been undertaken at Landfill 26. (U.S. Army Corps of Engineers 2001).

POL Hill

The POL Hill parcel is a former tank farm located west of the main airfield parcel, immediately south of Landfill 26. The POL parcel formerly contained 20 25,000-gallon underground storage tanks for jet fuel, an 840,000-gallon aboveground bulk fuel storage tank, one 25,000-gallon aboveground tank for jet fuel, and several other smaller tanks, as well as associated fuel lines and pumping systems. The tanks were removed from the site in 1986 and 1990, and remedial actions were conducted in 1990 and 1992 to address soil contamination. (U.S. Army Corps of Engineers 1996)

City of Novato (New Hamilton Partnership)

Property located southwest of the Hamilton main airfield parcel is being developed by the New Hamilton Partnership as a mixed-use area of commercial, retail, and residential uses (Figure 3.5-1). The first phase of the project was completed in 2000. The New Hamilton Partnership constructed a 100-year flood control levee in the Hamilton main airfield parcel (between the New Hamilton Partnership development and the Hamilton main airfield parcel). The Bayside residential development is located along Pizarro Drive, north of the HAAF hangars and adjacent to the main airfield parcel. Immediately southeast of Bayside, along the main airfield parcel, are the former HAAF hangars, which are currently being refurbished for commercial use, and a U.S. Coast Guard operational support area. U.S. Coast Guard housing and the South Gate residential development are located southeast of the hangar area, adjacent to the airfield. The Lanham Village, Hamilton Park, Traditions, Meadows, and Chapel Hill residential developments are located further west of the main airfield parcel on the former HAAF property. Palmisano Park, located near the southern end of Hangar Avenue, is a childrens park operated by the City of Novato.

Navy Ballfields

The Navy ballfields parcel is a 20-acre site owned by the U.S. Navy and located in the southwest corner of the HAAF parcel. The site is a former baseball field but is currently not in use. This parcel is part of the initial HWRP project area but is not considered as part of the ROD/RAP project area because it is under the Navy's jurisdiction. Spoils Pile N on the Navy ballfields parcel is considered in the ROD/RAP.

St. Vincent's Landholdings/Las Gallinas Sanitary District

The Roman Catholic Archdiocese owns approximately 1,500 acres south and southwest of the Hamilton main airfield parcel (Figure 3.5-1). The area, known as the St. Vincent's property, is mostly undeveloped land used primarily for grazing and hay production. The Las Gallinas Sanitary District owns a parcel southeast of the Hamilton main airfield parcel and adjacent to the St. Vincent's property.

Environmental Impacts and Mitigation Measures

Approach and Methods

Information related to land uses, utilities, and easements at the expansion site was reviewed and compared to the restoration alternatives to evaluate the potential for land use conflicts, disruption or loss of services provided by utilities, or conflicts with easements. Potential impacts were compared to the thresholds of significance described below to determine the level of significance of each impact.

Thresholds of Significance

According to Appendix G of the State CEQA Guidelines and professional criteria and judgment, a project is considered to have a significant impact on land use and public utilities if it would:

- conflict or be incompatible with the land use goals, objectives, or guidelines of appropriate plans;
- substantially conflict with an existing onsite land use or with existing or future adjacent land uses; or

- result in the loss of an existing easement or service to existing facilities.

Impacts and Mitigation Measures of the Proposed Project

Impact LAND-1: Consistency with Appropriate Plans for the Project Site. The proposed project would have no direct impact on land use designations of the site in the Novato General Plan, Hamilton Reuse Plan, and the San Francisco Bay Plan or with the Bay Trail Alignment Plan. Indirectly, the proposed project would have a beneficial impact on consistency with these plans by ensuring that contamination is remediated in a manner and to levels appropriate for the overall wetland restoration planned for the site; an ultimate use that is consistent with the land use designation of the site in each of these plans. This is considered a less-than-significant impact.

Impact LAND-2: Potential Impact to Existing Utilities. Remedial activities conducted as part of the ROD/RAP may occur within or adjacent to existing utilities. In particular, the power line to the NSD dechlorination plant would be adjacent to areas proposed for excavation. Avoidance of any structural components will be addressed through the utility clearance prior to commencement of remedial activities. This is considered a less-than-significant impact.

Impact LAND-3: Potential Impact to Existing Easements. Remediation activities, primarily along the eastern levee, may interfere with easements held by SLC to access the North Antenna Field Parcel and NSD to access the dechlorination plant. Through scheduling or provision of alternate routes across the site, it is anticipated that these easements could be reasonably accommodated during the planned site remediation. Following breach of the levee, an alternate access to the SLC parcel and NSD plant would have to be developed. Prior to levee breach and as part of the HWRP, the north levee between the HAAF and BMKV parcels would be reconstructed to support continued access to the NSD outfall line. It is anticipated that access to the SLC parcel could also be provided via this route. The planned relocation of the NSD dechlorination plant would preclude the need for an easement across the airfield in the long term. This is considered a less-than-significant impact.

Impact LAND-4: Compatibility with Adjacent Land Uses. Remedial activities conducted as part of the ROD/RAP would not result in any direct impact to current or future adjacent land uses. The proposed project would have indirect beneficial impacts on adjacent land use consistency by enabling future wetland restoration on the site for wetlands, which would be a use consistent with the current and planned uses of adjacent lands. This is considered a less-than-significant impact.

Section 3.6

Hazardous Substances and Waste

Introduction

This section describes the environmental setting and effects of the remedial action strategies analyzed in this EIR with regard to hazardous materials. Specifically, this section discusses existing hazardous materials conditions within the site, describes the applicable regulations pertaining to the State's approval of the ROD/RAP, and the assessment of substantial adverse effects and mitigation measures of the remedial action strategies in the ROD/RAP. A more detailed assessment of hazardous materials is presented in the ROD/RAP itself, as well as in the investigatory reports that support the ROD/RAP.

Environmental Setting

Regulatory Setting

The State is regulating these environmental actions as environmental response actions in accordance with the provisions of California Health and Safety Code and this constitutes a RAP subject to Chapter 6.8 of Division 20 of the California Health and Safety Code Section 25356.1. The RWQCB, with DTSC support, will be the lead state agency for oversight of the implementation of the ROD/RAP. The RWQCB, as authorized by PCWQCA, will adopt SCRs that will ensure implementation of the final approved ROD/RAP. The State will ensure that environmental assurance actions are taken to address residual concentrations of inboard area-wide DDTs and PAHs in soils adjacent to the runway through the imposition of waste discharge requirements governing the implementation of the HWRP.

HAAF is on the state's Hazardous Waste and Substances Sites (Cortese) List, but not on the federal National Priority List. The Cortese List is a compilation of sites with known hazardous materials releases. Government Code section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List.

The Porter–Cologne Water Quality Control Act of 1969

PCWQCA established the State Water Resources Control Board (SWRCB) and divided the state into 9 regional basins, each with a regional RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the State's surface and groundwater supplies. The San Francisco Bay RWQCB has jurisdiction over the project area. PCWQCA authorizes the SWRCB to draft state policies regarding water quality. In addition, the PCWQCA authorizes the RWQCB to issue Cleanup and Abatement Orders (Site Cleanup Requirements) and Waste Discharge Requirements (WDRs) for discharges that pollute or threaten to pollute surface or groundwater. PCWQCA is discussed further in Section 3.2, "Water Resources."

Residual Contamination in the Main Airfield Parcel and Coastal Salt Marsh Area

Hazardous material contamination at HAAF has been studied and documented over the past 10-15 years. As part of the BRAC process, remedial efforts are being conducted at HAAF under a sequence of regulatory phases. The Army identified the nature and extent of contamination during a series of assessments and investigations culminating in the Comprehensive Remedial Investigation Report (IT Corporation 1999a). According to the report, a variety of military facilities and functions occurred at Hamilton that could potentially have resulted in soil contamination, including underground storage tanks; aboveground storage tanks; transformers and transformer pads; aircraft maintenance and storage; storm drain and sanitary sewer systems; a former sewage treatment plant; a pump station; fuel lines; revetment areas; construction debris disposal areas; and the PDD, which collected runoff from the base and surrounding areas. Based on historical investigation, the contaminants detected at various sites on the Hamilton property include total petroleum hydrocarbons (diesel, gasoline, jet fuel, or motor oil), metals, dioxins and furans, VOCs, semi-volatile organic compounds, including PAHs, PCBs, and pesticides (IT Corporation 1999a).

Between 1998 and 1999, interim removal actions were completed on many of the sites where elevated levels of contaminants had been found. A description of site investigation and remedial investigation activities is provided in the Comprehensive Remedial Investigation Report (IT Corporation 1999a), interim removal action reports (IT Corporation 1999b, IT Corporation 2000), and the Remedial Design Report (Foster-Wheeler 2000). A human health and ecological risk assessment was prepared for both the inboard and the coastal marsh sites in 2001 (IT Corporation 2001). The Inboard Area Focused Feasibility Study Report (FFS) was completed in 2001 (CH2M Hill 2001) and the Coastal Salt Marsh Focused Feasibility Study Report was completed in 2003 (CH2M Hill 2003).

The purpose of the FFS reports was to identify areas that required further remedial action and to develop, evaluate, and recommend remedial alternatives for these sites to protect human health and the environment in light of the proposed wetland restoration reuse.

In 2001, the U.S. Army Corps of Engineers, St. Louis District, prepared an Archives Search Report (ASR) for the HAAF parcel. The report reviewed historical information concerning site use. Many sites identified in the study were determined to be sites already known to the Army and previously investigated by the Army BRAC environmental restoration program. Further investigation is required for four of the sites identified.

The sites of residual contamination identified in these previous studies and evaluated in the ROD/RAP are summarized in Chapter 2, "Description of Proposed Project." Remedial action strategies and action goals developed in the ROD/RAP for each site are shown in Tables 2-1 and 2-2. For detailed discussion of each site and a description of interim remedial actions completed and recommended alternatives, please refer to the ROD/RAP, or additionally, to the Comprehensive Remedial Investigation Report, Inboard Area Focused Feasibility Study Report, and Coastal Salt Marsh Focused Feasibility Study Report (IT Corporation 1999a, CH2M Hill 2001, CH2M Hill 2003).

Remedies for Residual Contamination in the ROD/RAP

As described in Chapter 2, "Description of the Proposed Project" remedial alternatives were initially developed in the FFS reports. These alternatives were evaluated and refined in the ROD/RAP and through development of goals and objectives of the remedial actions; final remedial alternatives were selected for each site. Goals and objectives developed for the ROD/RAP are predicated on the ultimate use of the HAAF site for wetland development. Thus, inherent in the proposed project is the mitigation of potential risk of exposure to hazardous materials by wetland receptors. The process for selecting remedies for residual contamination in the ROD/RAP is outlined below.

The ROD/RAP evaluates four alternatives to address sites with residual contamination: ROD/RAP Alternative 1, No Further Action; ROD/RAP Alternative 2, Excavation and Offsite Disposal; and ROD/RAP Alternative 3, Manage In-Situ, with Monitoring and Maintenance for Army BRAC Sites. The Army BRAC program will be responsible to perform the environmental response actions for all Army BRAC sites. ROD/RAP Alternative 4, Manage On-site, with Monitoring and Maintenance, was developed specifically for issues that will be addressed by the Army Civil Works Program through the HWRP, and therefore was not evaluated as a possible alternative for the Army BRAC sites. These remedial alternatives are described in detail in the ROD/RAP.

Goals for Residual Contamination in the ROD/RAP

The ROD/RAP first establishes goals for remedial actions to be undertaken at HAAF. The goals developed in the ROD/RAP are numeric limits for residual contamination following site clean up, referred to as action goals. Action goals are based on the type of contaminants identified, the future use of the area where the residual contamination is found, and the risk presented by the specific contaminants to the types of human and ecological receptors likely to be found in the specific area under a wetland development scenario. Contaminants of concern were identified through previous investigations. By evaluating the results of a risk assessment, initial action goals were developed during the FFS phase. These action goals were refined in the ROD/RAP as part of the final remedial selections.

To define action goals, a baseline risk assessment for HAAF was prepared by the Army for coastal salt marsh sites and inboard area sites. The baseline risk assessment estimated the potential risk that the residual contamination at sites within the inboard area may pose to human health and the environment at present, and during the development, maturation, and life of the wetland. The risk assessment assumed that exposure pathways are complete at all sites. Key baseline risk assessment assumptions are as follows.

- Exposures may occur now and in the future because of the chemicals present in the soil or sediment.
- Human and ecological receptors will be present in the future.
- The receptors were assumed to be directly exposed to existing soil or sediment (i.e., the risk assessment did not consider the fact that some sites are covered with concrete or clean fill, or will be covered in the future with imported cover material).
- For the future redevelopment scenario, existing soils will become sediments that support estuarine and freshwater biota.
- The site will not be used for residential or industrial purposes, so these scenarios were not considered in the Human Health Ecological Risk Assessment.

The ecological risk assessment considered both current and future land use scenarios for the inboard sites by evaluating the risks to representative plants and animals under estuarine, freshwater, and grassland habitat scenarios for each site. Exposure pathways associated with direct uptake and ingestion were used to assess the risks to the current and/or future ecological receptors and their associated habitats at the inboard area sites:

The baseline human health ecological risk assessment considered the recreational uses of the grassland and freshwater marsh environments as potentially complete exposure pathways under current land use conditions. Future land use conditions considered recreational uses of the grassland, freshwater marsh, and future estuarine environments as potentially complete exposure pathways. Based on the proposed land use, current and future land use exposure scenarios for humans were expected to be similar for terrestrial grassland and freshwater marsh environments.

The results of the baseline risk assessment were further evaluated in the FFS to determine how the potential risk should be addressed by proposed remedial actions. The FFS refined the conceptual model used in the baseline risk assessment. Similar to the baseline risk assessment, the FFS conceptual model was based on potential exposure pathways and human and ecological receptors for a wetland end use. However, the baseline risk assessment evaluated every receptor at each site, while the FFS conceptual model identified and evaluated receptors based on the general habitat types (upland, estuarine, freshwater, or recreational) that are expected to be developed at each site. These general habitat types were established by the preferred wetland configuration (Conservancy 1998). Although the wetland design has not been finalized, the general habitat types and receptors at a specific location are not expected to change significantly because of the physical constraints of the site.

The FFS used hazard indices developed in the baseline risk assessment to determine whether a site required remedial action. To require remedial action and evaluation in the FFS, a site had to have at least one receptor with a hazard index greater than 1. The receptors evaluated included those identified in the FFS conceptual model (as described above).

For each remaining site that required further evaluation, the FFS established site-specific FFS contaminants of potential concern based on the receptors that were expected to be present during the development, maturation, and life of the wetland and the potential risk posed by residual contaminants.

The process for determining the action goals and how those action goals would be compared to the sites was refined during development of the ROD/RAP. For each site, the ROD/RAP reevaluated the contaminants of concern presented in the FFS by comparing each site-specific FFS contaminants of potential concern to the action goals established for the ROD/RAP.

For each site, the ROD/RAP identifies contaminants of concern as the contaminants that should be compared to the action goals. Detections of these contaminants of concern above the action goals are evaluated for remedial actions in the ROD/RAP. The action goals are based primarily on site-specific ambient concentrations, in combination with RWQCB-developed numbers for San Francisco Bay Ambient sediments and NOAA effects-range low (ER-L) sediment concentrations. DDTs (DDT and its breakdown products DDE and DDD) have been found throughout the HAAF in surface soils. DDTs are persistent and bioaccumulative toxic substances. Based on professional judgment, in order to protect future receptors from potential risks associated with DDTs, the Army, DTSC, and RWQCB agreed that soils containing a total concentration of DDTs in excess of 1 part per million (ppm) will be excavated and disposed of offsite. DDT action goals are derived from risk based calculations protective of the California clapper rail. Sites not addressed in the

Army's risk assessment (e.g., area-wide DDT contamination, PAHs adjacent to the runways, and ASR sites) would also be subject to the action goals proposed in the ROD/RAP.

Objectives for Remedial Actions in the ROD/RAP

To guide the process of selecting remedial alternatives, Remedial Action Objectives (RAOs) are developed in the ROD/RAP to define the ultimate aim of the remediation and evaluate the ability of the different alternatives to achieve these aims. RAOs in the ROD/RAP were developed for the three main categories of contamination issues.

Army BRAC Sites

The RAOs for the Army BRAC sites are to prevent or mitigate the exposure of ecological and human receptors to soil and/or sediment containing concentrations of site specific contaminants of concern that are greater than their respective action goals at a given site. This can be accomplished by reducing the concentrations of residual contaminants of concern that are greater than their action goals or by controlling or eliminating the exposure of receptors to residual contaminants of concern that are greater than their action goals.

Other Army BRAC Environmental Considerations

Other Army BRAC Environmental Considerations includes the GSA/BRAC Soil Stockpiles and the ASR sites. The RAOs for the other Army BRAC Environmental Consideration sites are to prevent or mitigate the exposure of ecological and human receptors to soil and/or sediment containing concentrations of chemicals that are greater than the established action goals. This can be accomplished by reducing the concentrations of residual contaminants of concern that are greater than their action goals or by controlling or eliminating the exposure of receptors to residual contaminants of concern that are greater than their action goals.

HWRP Issues

HWRP Issues includes area-wide DDTs, PAHs near the runway, and soil contaminated with lead-based paint. The RAOs for the HWRP issues are to prevent or mitigate the exposure of ecological and human receptors to soil containing concentrations of contaminants of concern that are greater than their respective action goals for these issues.

Remedial Selection Process

This subsequent EIR has been prepared pursuant to CEQA due to the discretion exercised by DTSC and RWQCB in their consideration of the ROD/RAP for approval. The selection of the remedy by DTSC and the RWQCB is based on their authority to approve RAPs as set forth in Section 25356.1 of the California Health and Safety Code. The statutory requirements governing selection of the remedy are also contained in Health and Safety Code Section 25356.1.5. In summary, any remedy selected in a RAP must be based on, and be no less stringent than, requirements of the NCP (40 Code of Federal Regulations [CFR] Part 300), regulations and applicable requirements contained in Division 7 of the Water Code, regulations promulgated thereunder, resolutions issued by SWRCB and the San Francisco Bay Regional Water Quality Control Plan and applicable provisions of Chapter 6.8 of Division 20 of the Health and Safety Code.

Approval of a RAP by DTSC and the RWQCB under Health and Safety Code Section 25356.1 must consider

- health and safety risks posed by conditions at the site, including scientific data and reports that may have a relationship to the site;
- the effect of contamination or pollution levels on present, future, and probable beneficial uses of contaminated, polluted, or threatened resources;
- the effect of alternative remedial action measures on the reasonable availability of groundwater resources for present, future, and probable beneficial uses;
- site-specific characteristics, including the potential for off-site migration of hazardous substances, the surface or subsurface soil, and the hydrogeologic conditions, as well as preexisting background contamination levels;
- cost-effectiveness of alternative remedial action measures; and
- potential environmental impacts of alternative remedial action measures.

DTSC and the RWQCB have determined that the action goals selected in the ROD/RAP meet the applicable laws and requirements of the State. DTSC and the RWQCB have also determined that the remedies selected in the ROD/RAP are in compliance with the requirements of the California Health and Safety Code.

Environmental Impacts and Mitigation Measures

Approach and Methodology

The assessment evaluates the potential for remediation activities under the proposed remedial action strategies to adversely affect the environmental conditions within the Hamilton Main Airfield Parcel and adjacent coastal salt marsh area with respect to hazardous materials. The assessment of adverse effects related to hazardous materials was based on the findings of the ROD/RAP (CH2M Hill 2003).

Thresholds of Significance

The proposed project may result in substantial adverse effects related to hazardous materials if they would create a potential hazard to public health or the environment from the release of on-site contaminants.

Impacts and Mitigation Measures of the Proposed Project

Impact HAZ-1: Create a Significant Hazard to the Human Health or the Environment from Contaminants Remaining on the Site. The ROD/RAP develops specific action goals and remedial action objectives that define how each contaminant at each site should be addressed. These goals and objectives are defined specifically to be protective to potential human and ecological receptors.

As a result residual contamination remaining on the site through the no further action strategy would be at levels below defined action goals and therefore would not present a significant risk to human or ecological health under the proposed future use of the site for wetlands restoration.

Contaminants identified at sites where the selected remedy is excavation with offsite disposal are not expected to be released into the environment. Excavation of contaminated material would continue at these sites until the action goals are achieved. The one exception would be sites in the coastal salt marsh where it may become infeasible (due to depth) to continue excavation until contaminants can be reduced to below action goals. The inability to achieve action goals and suspension of excavation would be based on concurrence from the State and the Army that residual contamination would not pose a significant risk to human or ecological health. Contamination at depth in a marsh environment generally presents less of a risk than contaminants present in surface sediments. In accordance with the ROD/RAP, institutional controls would be required in the form of land use restrictions to ensure that future exposure of contaminants to human or environmental receptors does not occur.

Contaminants identified at sites to be managed under the in-situ or on-site remedial action strategies are similarly not expected to be released into the environment. For these sites, a performance standard is developed in the ROD/RAP requiring 3 feet of stable cover or equivalent. In doing so, potential risks to future wetland receptors caused by exposure to contaminants above action goals would be reduced to levels that would not result in significant risks to human or ecological health. In addition to the three feet of stable cover, potential exposure through reintroduction of the contaminants into the environment would be further prevented by institutional controls placed on the site to prevent excavation of the soils, or development of the site for potentially sensitive human uses not evaluated in the existing risk assessment. Potential exposure of these sites through channel scour is discussed below in Impact HAZ-2.

The ROD/RAP remedial strategies were selected to avoid and reduce significant risks to human and ecological receptors in light of the proposed wetland reuse. Thus, implementation of the ROD/RAP and the HWRP is not expected to create a significant hazard to the public or the environment, and thus this impact is considered less than significant.

Impact HAZ-2: Create a Significant Hazard to the Human Health or the Environment from Release of Contaminants by Channel Scour. Many sites of residual contamination are proposed to remain on the property through either in-situ or onsite management strategies. These contaminants would receive stable cover from either dredge materials placed on the site for the HWRP, or other sources of appropriate material. Future development and maturation of the proposed wetland may expose these contaminants as the wetland channels develop and, through tidal action, begin to cut into the sediments on site. Because final morphological modeling to assess the location and depth of channel scour has not been completed, contaminants proposed to remain in place or onsite may be within areas of channel scour and be exposed to the water column. The ROD/RAP conditions the ultimate selection of remedial alternatives on final morphological modeling. The ROD/RAP requires that any site proposed for in-situ management would be addressed through excavation and offsite disposal if, based on the final modeling and HWRP design, it is determined that the performance standard of 3 feet of stable cover, or equivalent, cannot be achieved. On-site management of DDT and PAH contaminated soils is similarly required under the ROD/RAP to be guided by the final morphological model and design for the HWRP.

Implementation of these ROD/RAP remedial strategies would prevent environmental exposure of contaminants above the remedial action goals due to tidal scour and thus this impact is considered less than significant.

Impact HAZ-3: Create a Significant Hazard to the Human Health or the Environment through the Release of Contaminants during Site Clean Up. Implementation of the remedial action strategies would involve excavation of contaminated soils and other on-site construction activity. Potential threats to human and environmental health could also occur during off-site transport of contaminated soil.

All remediation of the site would be conducted pursuant to OSHA guidelines to protect worker health and safety. The site is not open to the public. Best Management Practices would be implemented and monitored during excavation, transfer, and transport of contaminated soils on and offsite to ensure the safety of the surrounding environment and sensitive receptors (the BMPs are described in greater detail in Section 3.2, "Water Resources," and 3.8, "Air Quality"). With implementation of relevant water quality and air quality BMPs, site remediation is not expected to create a significant hazard to the public or the environment and thus this impact is considered less than significant.

Section 3.7
Transportation

Data Sources

Information presented in this section was derived primarily from the HWRP EIR/EIS (Conservancy 1998) and the Hamilton Army Airfield Disposal and Reuse EIS (U.S. Army Corps of Engineers 1996).

Environmental Setting

Regional Access

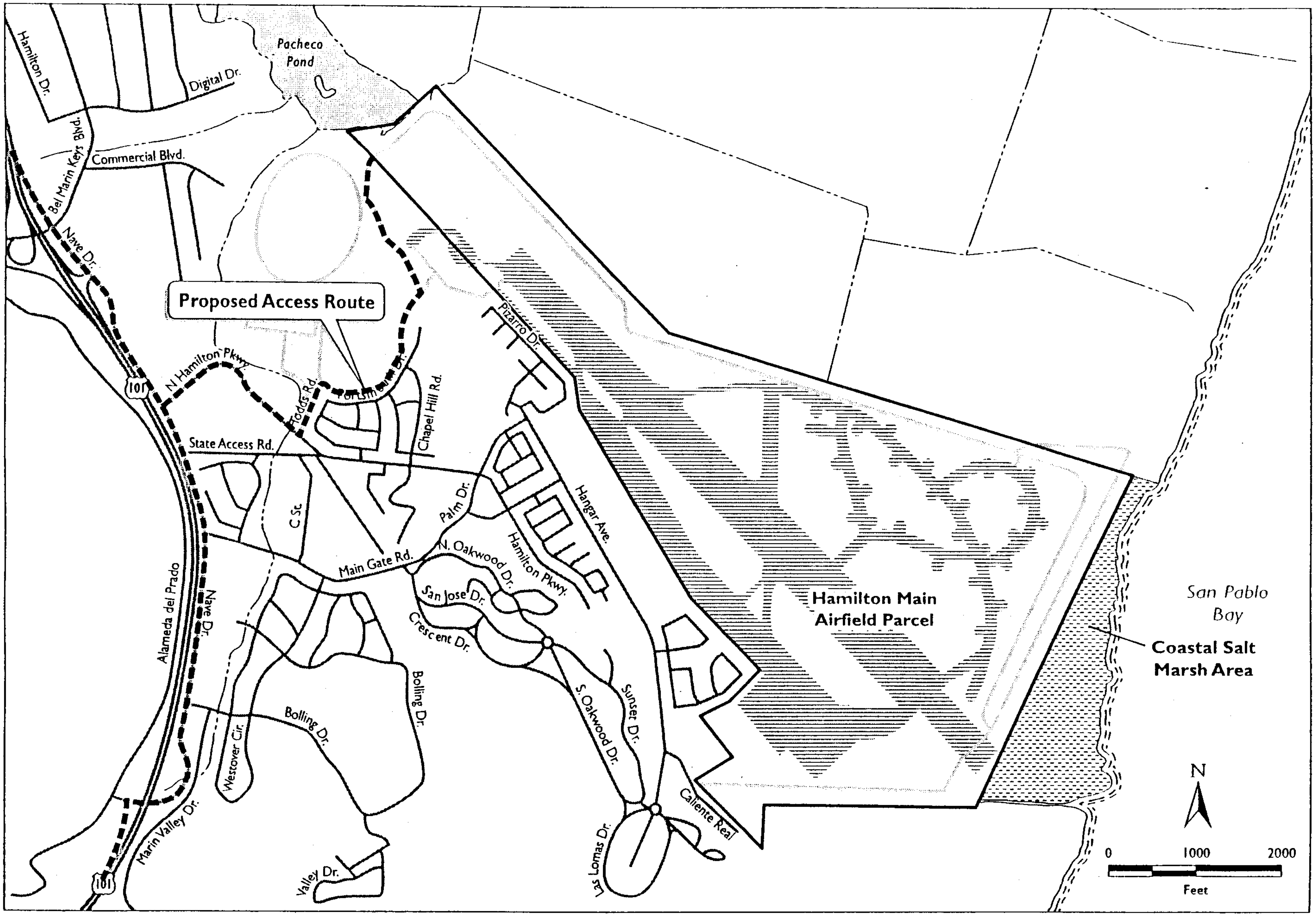
Regional access to the project area is provided by U.S. Highway 101 and State Route 37. U.S. Highway 101 is a principal north-south freeway connecting HAAF to Sonoma County to the north and to the San Francisco Bay Area to the south. State Route 37 extends east from U.S. Highway 101 in Novato to Interstate 80 in Vallejo. Figure 3.7-1 identifies major roadways in the project area.

Access to the Project Area

Access to the HAAF parcel is currently provided by Ignacio Boulevard, Alameda del Prado, Nave Drive, Main Gate Road, and State Access Road. All vehicles traveling to and from HAAF currently use Nave Drive. This two-lane road extends north from Alameda del Prado to the U.S. Highway 101 interchange at Ignacio Boulevard. Nave Drive connects to Main Gate Road and State Access Road, which provide access to HAAF.

Access to remediation sites in the inboard area and near the eastern perimeter levee would be primarily via the runway, taxiways, and other existing internal access roads.

No public roads occur in the HAAF parcel. Access around the area is provided by Perimeter Road. The number of trips made to the HAAF parcel is unknown; however, the area is not open to the public.



Jones & Stokes

Figure 3.7-1
T... sportation Network in the Project Area

As described in Chapter 2, all materials transported to and from the site would follow an established access route (Figure 2-6). From the project site, the designated route would follow an unpaved access road from the northwestern end of the airfield, around the eastern perimeter of Landfill 26, to the intersection with Todd's Road. At Todd's Road the route would turn left and proceed approximately 0.25 mile to the intersection with North Hamilton Parkway. The route would turn right on North Hamilton Parkway and proceed west to Nave Drive. Depending on the destination, vehicles would either turn right on Nave Drive to access Highway 101 north at the Bel Marin Keys entrance, or turn left on Nave Drive to access Highway 101 south at Alameda del Prado entrance.

Existing Levels of Service

Traffic and transportation movement is measured by a level of service (LOS) rating, which ranges from A to F. LOS A is operationally the most efficient and generally exhibits the least amount of traffic delay and resulting congestion. Each successive LOS (B through F) is less operationally efficient. Standard descriptions of LOS are provided in Tables 3.7-1 and 3.7-2.

Table 3.7-1 Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control per Vehicle (Seconds)
A	Few or no delays.	≤ 10.0
B	Short traffic delays.	> 10.0 to 15.0
C	Average traffic delays.	> 15.0 to 25.0
D	Long traffic delays.	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: Transportation Research Board Highway Capacity Manual 2000.

The existing LOS for critical intersections in the project area was estimated for the 1998 HWRP EIR/EIS. Levels of service ranged from A to D during a.m. and p.m. peak hours (Table 3.7-3). The LOS for peak-hour freeway operations was estimated to range from E to F on U.S. Highway 101 and was estimated at C to D on State Route 37 between U.S. Highway 101 and Atherton Avenue (Table 3.7-4).

Table 3.7-2. Signalized Intersection LOS Criteria

LOS	Sum of Critical Volume-to-Capacity Ratio	Description
A	< 0.60	Operations with very low control delay, up to 10 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	0.61 – 0.70	Operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	0.71 – 0.80	Operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.
D	0.81 – 0.90	Operations with control delay greater than 35 seconds and up to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	0.91 – 1.00	Operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. The individual cycle failures are frequent occurrences.
F	> 1.00	Operation with control delay in excess of 80 seconds per vehicle. This level is considered to be unacceptable with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.

Source: Contra Costa Transportation Authority, Technical Procedures 1997.

Table 3.7-3. Summary of Intersection Levels of Service and Peak-Hour Freeway Operations

	Intersection	LOS A.M.	LOS P.M.
1.	Ignacio Boulevard/U.S. Highway 101 southbound ramps	D	C
2.	Ignacio Boulevard/U.S. Highway 101 northbound on-ramp	B	D
3.	Nave Drive/U.S. Highway 101 northbound off-ramp	B	D
4.	Nave Drive/State Access Road	A	D
5.	Nave Drive/Main Gate Road	C	D
6.	Nave Drive/U.S. Highway 101 northbound ramps	A	A
7.	Alameda del Prado/Clay Court	C	C
8.	Alameda del Prado/U.S. Highway 101 southbound ramps	A	A

Note: The capacity analysis for cumulative conditions was based on the roadway network improvements developed for the Hamilton Field Project. These improvements include modifications to the U.S. Highway 101/Ignacio Boulevard interchange, addition of lanes to some of the critical intersections, and signalization of the unsignalized intersections.
Source: U.S. Army Corps of Engineers 1996

Table 3.7-4. Year 2010 Freeway Capacity

		Year 2010 Peak Direction			
	Capacity Each	A.M. Southbound		P.M. Northbound	
Freeway Segment	Direction	Volume	LOS	Volume	LOS
U.S. Highway 101 - Lucas Valley Rd. to Miller Creek Rd.	7,200	8,540	F	7,750	F
U.S. Highway 101 - Miller Creek Rd. to Alameda del Prado	8,100	8,660	F	7,870	E
U.S. Highway 101 - Alameda del Prado to Ignacio Blvd.	7,200	8,020	F	7,600	F
U.S. Highway 101 - Ignacio Blvd. to State Route 37	8,100	8,880	F	9,080	F
U.S. Highway 101 - State Route 37 to Rowland Blvd.	5,400	6,360	F	6,470	F
U.S. Highway 101 - Rowland Blvd. to De Long Ave.	5,400	5,280	E	5,550	F
U.S. Highway 101 - De Long Ave. to Atherton Ave.	5,400	6,370	F	6,130	F
U.S. Highway 101 - Atherton Ave. to Marin/Sonoma County line	4,400	5,100	F	5,230	F
State Route 37 - U.S. Highway 101 to Atherton Ave.	3,600	3,010	D	2,750	C

Environmental Impacts and Mitigation Measures

Transportation impacts of the proposed project would be associated primarily with worker trips to the site and transporting materials from the excavation sites to the landfill.

Approach and Methods

The proposed project could result in impacts associated with the excavation and disposal of contaminated soils and the transportation of fill material to the project area. Construction-related impacts would also result from trips to and from the project site by construction workers. Impacts related to monitoring and adaptive management activities could occur as a result of trips made to the site by caretakers, researchers, or visitors.

Use of LOS as a quantitative method for describing traffic conditions on intersections and road segments has been discussed above. This evaluation is based on the traffic model used by the Army in the HAAF Disposal and Reuse EIS (U.S. Army Corps of Engineers 1996) to evaluate the impacts of different reuse scenarios on roadway LOS in the project area. (The model was first developed to evaluate buildout of the New Hamilton Partnership development.)

The model predicted the LOS for eight intersections in the project vicinity and nine major highway segments (eight segments of U.S. Highway 101 and one segment of State Route 37). The results of the analysis of no-action conditions from the HAAF Disposal and Reuse EIS were used to characterize conditions if the HAAF parcel is not reused and the HWRP is not implemented, while representing buildout of the New Hamilton Partnership project. These "no-action" or baseline conditions were used as a basis for comparison to traffic conditions if the HWRP is implemented.

The total number of daily trips generated during site remediation was based on estimates in the ROD/RAP of the nature of remedial activities, including the amount of material to be excavated, graded, or stockpiled on the site; the time needed to complete remedial activities; and assumptions about the number of pieces of construction equipment required. Trip generation estimates are provided in Appendix C. The number of peak employees was estimated by assuming one employee per construction vehicle/equipment at peak. A total of 26 vehicles/equipment, and therefore 26 employees, were presumed as the estimate of potential peak activity.

Each worker was presumed to arrive and depart the work site in his or her own personal vehicle. Some workers may commute together, but the assumption of individual vehicles is conservative. Fifty-two daily commute trips were estimated for period of peak activity on-site: 26 trips during the morning commute peak hours and 26 trips during the evening commute peak hours. In addition, 26 additional trips during the lunch hour were presumed, assuming that half of the worker vehicle are used to go off-site for lunch or to run errands.

A total of 8 large dump trucks are presumed to be in use to haul soil off to appropriate disposal sites at the point of peak activity. The characterization of the material will determine the requisite disposal site. As a conservative estimate, it was presumed that 90 percent of the soil is hauled to the Altamont Landfill in Alameda County; 5 percent to the Redwood Sanitary Landfill in Novato; and 5 percent to the Kettleman Hills Landfill in Kettleman City. Each dump truck was assumed to make two runs per day, resulting in a total of 32 haul trips per day at peak.

Based on these estimates, at times of peak remedial activity, the estimated total trips would be 110 trips per day. It was assumed that most morning truck trips from the site would not occur during the morning peak commute because trucks are presumed to be loaded on-site in the morning and hauled out during the day; thus, 25 percent (2 trips) of the morning haul (outbound) trips were assumed to occur during the morning commute peak hours. Afternoon return haul trips could occur during the evening peak period; thus 75 percent (6 trips) of the inbound trips were presumed to occur during evening peak commute hours. The remainder of the morning and afternoon truck trips were assumed to occur at off-commute peak hours. The 26 trips during the lunch hour would be off-commute peak hour trips.

Thus, it was estimated that, at peak level of remedial activity, a total of 28 trips would occur during morning commute peak hours and 32 trips would occur during afternoon commute peak hours.

Thresholds of Significance

According to Appendix G of the State CEQA Guidelines, a project will normally have a significant impact on the environment if it would result in an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

Impacts and Mitigation Measures of the Proposed Project

Impact T-1: Change in LOS at Important Intersections and Roadway Segments during Construction. As indicated under "Approach and Methods" above, remediation activities at the project site are estimated to increase the number of vehicle trips to the project site by a maximum of 52 trips per day. Based on the LOS for intersections and roadway segments shown in Table 3.7-3, the daily increase in traffic would not change LOS on roadway segments or important intersections. In addition, most truck trips associated with hauling of materials from the site would occur during off peak hours. Because the minor increase in daily traffic is not expected to result in a change in LOS, the impact on transportation of the proposed project is considered less than significant and no mitigation is required.

Impact T-2: Impacts to Freeway LOS during Remediation. The proposed project would add approximately 52 vehicle trips per day to the roadway network during the highest level of activity. It is estimated that 28 trips and 32 trips would occur on area freeways (Highways 101 and 37) during the morning or evening peak period, respectively. The addition of peak period vehicle trips would result in additional traffic on segments of Highways 101 and 37 that currently operate at LOS F during the peak periods. The addition of these peak hour trips is considered to be a significant and unavoidable impact to the area freeway system.

Section 3.8
Air Quality

Data Sources

The Bay Area Air Quality Management District (BAAQMD) guidelines for assessing air quality impacts were used to evaluate the environmental effects of the project (BAAQMD 1999).

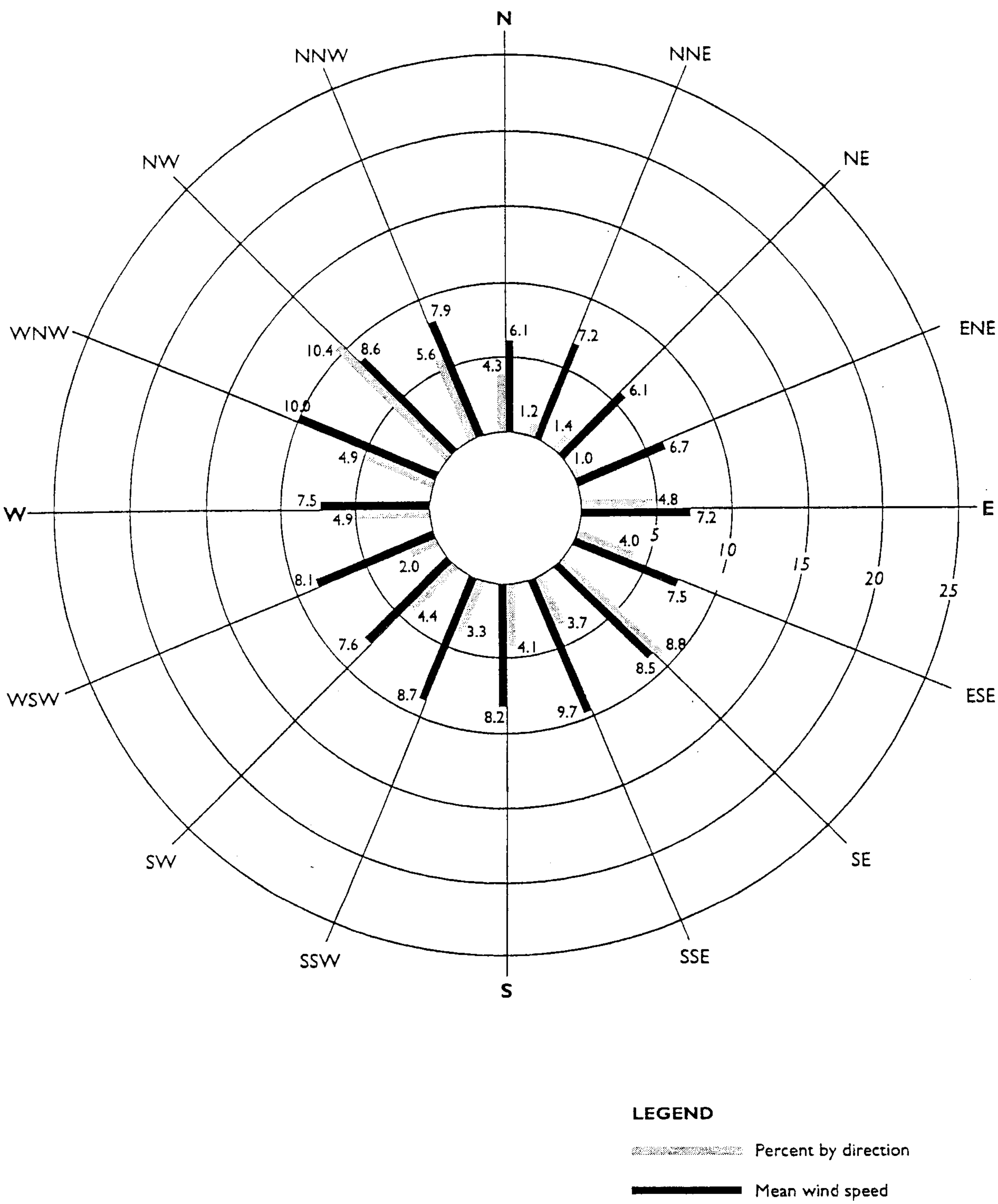
Environmental Setting

Regional Topography and Climate

The concentration of a given pollutant in the atmosphere is determined by the amount of pollutant released by various sources combined with the atmosphere's ability to transport and dilute the pollutant. The major determinants of air pollution transport and dilution are wind, atmospheric stability, terrain, and exposure to sunlight (insolation).

The project site is within the San Francisco Bay Area Air Basin (SFBAAB), which includes the City of San Francisco; portions of Sonoma and Solano Counties; and all of San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Napa Counties. The project area is characterized by warm, dry summers and cool, moist winters. The topography is generally flat with elevations of less than 100 feet above sea level.

The predominant annual wind direction is from the northwest. During spring and fall, the predominant direction is from the west-northwest. The predominant wind direction is from the east-southeast during summer and from the north-northwest during winter. Mean wind speeds range from 5 to 10 miles per hour, and calm winds occur 31.3 percent of the time. (California Air Resources Board 1984). The wind rose for a meteorological station located at HAAF, which shows the percentage of time wind blows in each direction and the mean wind speed by direction, is shown in Figure 3.8-1.



Based on 278,159 hourly observations
from 1939 to 1970 at Hamilton Army Air Field.

Source: California Air Resources Board, 1984

03145.03.001

Jones & Stokes

Figure 3.8-1
Windrose Depicting Average Wind Speed and Directional Frequency at Hamilton Army Airfield

Federal and State Ambient Air Quality Standards

The State of California and the federal government have each established ambient air quality standards for air pollutants (see Table 3.8-1, following page). For some pollutants, separate standards have been set for different periods. Most standards are established to protect public health; however, for some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

The air pollutants of greatest concern in the area include carbon monoxide (CO), ozone, and inhalable particulate matter less than 10 microns in diameter (PM_{10}).

Attainment Status

The SFBAAB is currently classified as a nonattainment area for both the state and federal ozone standards, and for state PM_{10} standards. The SFBAAB is in attainment of the federal PM_{10} standards, state and federal nitrogen dioxide and sulfur dioxide standards, and state CO standards. The SFBAAB is a maintenance area for the federal CO standards.

Air Quality Management Programs

Air pollution control programs were established in California before the enactment of federal requirements. Federal Clean Air Act legislation in the 1970s resulted in a gradual merger of local and federal air quality programs, particularly industrial-source air quality permit programs. Development of air quality management planning programs during the past decade has generally been in response to requirements established by the federal Clean Air Act.

Table 3.8-1. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard	Federal Standard
Ozone	8 hours	—	0.08 ppm
	1 hour	0.09 ppm (180 μg/m^3)	0.12 ppm (235μg/m^3)
CO	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide	annual average	—	0.053 ppm (100 μg/m^3)
	1 hour	0.25 ppm (470 μg/m^3)	—
Sulfur Dioxide	annual average	—	80 μg/m^3 (0.03 ppm)
	24 hours	0.04 ppm (105 μg/m^3)	365 μg/m^3 (0.14 ppm)
	1 hour	0.25 ppm (655 μg/m^3)	—
PM_{10}	annual arithmetic mean	—	50 μg/m^3
	annual geometric mean	30 μg/m^3	—
	24 hours	50 μg/m^3	150 μg/m^3
Particulate Matter—Fine ($PM_{2.5}$)	annual arithmetic mean	—	15 μg/m^3
	24 hours	—	65 μg/m^3
Sulfates	24 hours	25 μg/m^3	—
Lead	calendar quarter	—	1.5 μg/m^3
	30-day average	1.5 μg/m^3	—
Hydrogen Sulfide	1 hour	0.03 ppm (42 μg/m^3)	—
Vinyl Chloride (chloroethene)	24 hours	0.010 ppm (26 μg/m^3)	—
Visibility-Reducing Particles	8 hours (1000–1800 PST)	*	—

Notes: ppm = parts per million
mg/m^3 = milligrams per cubic meter
μg/m^3 = micrograms per cubic meter
* Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70%. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

The enactment of the California Clean Air Act in 1988 and the federal Clean Air Act Amendments of 1990 has produced additional changes in the structure and administration of air quality management programs. The California Clean Air Act requires preparation of an air quality attainment plan for areas that violate state air quality standards for CO, sulfur dioxide, nitrogen dioxide, or ozone. No locally prepared attainment plans are required for areas that violate the state PM_{10} standards. The California Air Resources Board addresses PM_{10} attainment issues in *California Air Quality Data* (California Air Resources Board 1993).

Air pollution problems in the SFBAAB result primarily from locally generated emissions. The SFBAAB, however, has been identified as a source of ozone-precursor emissions that occasionally contribute to air quality problems in the Monterey Bay area, the northern San Joaquin Valley, and the southern Sacramento Valley. Consequently, air quality planning efforts for the SFBAAB must reduce the area's impact on downwind air basins as well as correcting local air pollution problems.

The BAAQMD has recently prepared two air quality plans designed to bring the SFBAAB into attainment with ozone standards. The 1999 Ozone Attainment Plan was designed to bring the SFBAAB into attainment with the federal ozone ambient air quality standards. On December 20, 2000, the BAAQMD also adopted the 2000 Clean Air Plan (BAAQMD 2000). The current plan represents the third triennial update of the 1991 Clean Air Plan. It contains additional rules and regulations that are designed to bring the SFBAAB into attainment with the California ozone ambient air quality standards.

The Bay Area did not attain the federal ozone standard by the 2000 deadline stipulated in the 1999 Ozone Attainment Plan. As a result, the U.S. Environmental Protection Agency (EPA) disapproved the 1999 Ozone Attainment Plan and required preparation of a new plan providing for an updated volatile organic compounds and nitrogen oxides emissions inventory and new transportation conformity budgets. In response, the BAAQMD developed the San Francisco Bay Area 2001 Ozone Attainment Plan for the 1-Hour National Ozone Standard (2001 Plan). The 2001 Plan was formally adopted by the BAAQMD, the Metropolitan Transportation Commission, and the Association of Bay Area Governments on October 26, 2001. In November 2001, the California Air Resources Board also approved the 2001 Plan and submitted it to the EPA for review and approval. The 2001 Plan is currently in EPA review (BAAQMD 2002).

The deadline for attainment of the federal ozone standard under the 2001 Plan is 2006. The 2001 Plan contains a control strategy that incorporates seven new stationary source measures, five new transportation control measures, and 11 further-study measures. The 2001 Plan also includes a commitment to strengthen the Smog Check Program and a new assessment of attainment status based on the available data for the Bay Area. Attainment status will be reevaluated in 2003, using data from the Central California Ozone Study. In 2004, a revised State Implementation Plan incorporating any necessary modifications to the control strategy will be submitted to the EPA (BAAQMD 2002).

Existing Air Quality Conditions

The existing air quality conditions in the area are characterized by air quality monitoring data collected in the region. PM_{10}, CO, and ozone concentrations are measured at several north Bay monitoring stations. Recent monitoring data are presented on the following page in Table 3.8-2. The closest monitoring station is located in San Rafael. A description of the major pollutants found in the area is provided below.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials. Ozone causes extensive damage to plants by leaf discoloration and cell damage.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded more than 3 days in 3 years. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than 3 times in any 3-year period. The monitoring data has shown few instances where exceedances of the ozone state standard occurred during the 3 most recent years for which data are available.

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NOx), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and NOx, are emitted by mobile sources and by stationary combustion equipment.

Table 3.8-2. Ambient Air Quality Monitoring Data Recorded at San Rafael Monitoring Station

Pollutant Standards	1999	2000	2001
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.102	0.071	0.090
No. Days Standard Exceeded			
NAAQS (1-hour) > 0.12 ppm	0	0	0
CAAQS (1-hour) > 0.09 ppm	2	0	0
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	2.9	2.3	2.4
Maximum 1-hour concentration (ppm)	5.6	4.2	5.2
No. Days Standard Exceeded			
NAAQS (8-hour) $\geq$ 9.0 ppm	0	0	0
NAAQS (1-hour) $\geq$ 35 ppm	0	0	0
CAAQS (8-hour) $\geq$ 9.0 ppm	0	0	0
CAAQS (1-hour) $\geq$ 20 ppm	0	0	0
Particulate Matter			
Maximum 24-hour concentration ($\mu g/m^3$)	75.6	39.5	79.0
2^{nd} highest 24-hour concentration ($\mu g/m^3$)	64.4	38.7	54.0
Average arithmetic mean concentration ($\mu g/m^3$)	22.0	19.5	20.4
Average geometric mean concentration ($\mu g/m^3$)	19.5	18.2	18.1
No. Days Standard Exceeded			
NAAQS (24-hour) > 50 $\mu g/m^3$	0	0	0
CAAQS (24-hour) > 150 $\mu g/m^3$ (recorded every 6 days)	2	0	2

Notes: NAAQS = National Ambient Air Quality Standards
CAAQS = California Ambient Air Quality Standards
ppm = parts per million
µg/m3 = micrograms per cubic meter

Source: BAAQMD 2003

Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches and nausea to death.

State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, and the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period. The monitoring data shows no recorded violations of the CO standards during the 3 most recent years for which data are available.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light wind combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Particulates

Health concerns associated with suspended particulate matter focus on particles small enough to reach the lungs when inhaled. Particulates can damage human health and retard plant growth. Particulates also reduce visibility, soil buildings and other materials, and corrode substances. The primary particulate of concern in the area is PM_{10}.

The state PM_{10} standards are 50 micrograms per cubic meter as a 24-hour average and 30 micrograms per cubic meter as an annual geometric mean. The federal PM_{10} standards are 150 micrograms per cubic meter as a 24-hour average and 50 micrograms per cubic meter as an annual arithmetic mean. The monitoring data shows a few exceedances of the state PM_{10} 24-hour standard during the 3 most recent years for which data are available.

PM_{10} emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

Sensitive Receptors

Sensitive receptors in the project area include residences to the south, west, and north of HAAF. The Hamilton Elementary School is located on Main Gate Road approximately 1.1 miles west of the western edge of the HAAF main airfield parcel.

Environmental Impacts and Mitigation Measures

Analytical Methods

The approach used in evaluation of air quality impacts is generally qualitative and follows requirements outlined by the BAAQMD. The BAAQMD's approach to analysis of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions (BAAQMD 1999).

Impact Mechanisms

Remediation activities on the site may disturb and release contaminants into the air. Certain contaminants identified on the site, such as total petroleum hydrocarbons, may volatilize during remediation activities. However, most contaminants identified on the site are molecularly heavy, nonvolatile compounds that bind to soil. The primary concern with regard to remediation-related pollution emissions is therefore fugitive dust.

PM_{10} emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved roads, and emission of vehicle and equipment exhaust. Construction-related emissions of PM_{10} can vary greatly depending on the level of activity, the specific operations occurring, the equipment being operated, local soils, weather conditions, and other factors. Construction-related emissions can cause substantial increases in localized concentrations of PM_{10}. Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces. Contaminants in soils removed or relocated as part of the proposed project are discussed further in Section 3.6, "Hazardous Substances and Waste."

Construction equipment emits CO and ozone precursors. However, these emissions are included in the emission inventory that is the basis for the regional air quality plans. Construction activities are not expected to impede attainment or maintenance of ozone and CO standards in the Bay Area (BAAQMD 1996). Project impacts on CO are assumed to be less than significant and are not evaluated further.

Thresholds of Significance

Based on the State CEQA Guidelines and professional standards, a project is considered to have a significant impact on air quality if it would

- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- expose sensitive receptors to substantial pollutant concentrations,
- create objectionable odors affecting a substantial number of people, or
- conflict with or obstruct implementation of the applicable air quality management plan.

Specific emissions thresholds are contained in BAAQMD's *CEQA Guidelines for Assessing the Air Quality Impacts of Projects and Plans* (BAAQMD 1999).

Impacts and Mitigation Measures of the Proposed Project

Impact A-1: Emissions of Fugitive Dust from Remediation Activities. As described in the above discussion of impact mechanisms, implementation of the proposed ROD/RAP would result in fugitive dust emissions (including PM_{10}) produced by grading, excavation, and transport of materials on the site. As discussed in the ROD/RAP, some of the soils on the site contain residual contaminants. Fugitive dust generated during remediation may thus contain residual contaminants that are present is site soils. This impact would be considered significant. To reduce this impact to a less-than-significant level, the following mitigation measure would be implemented.

Mitigation Measure A-1: Control Fugitive Dust Emissions in Accordance with BAAQMD Standards. The following control measures would be applied at the site, as necessary, to control fugitive dust. Because of the nature of the contaminated soils on the site and the project's location near sensitive receptors, enhanced control measures would also be required, as necessary, to control fugitive dust.

Basic Control Measures

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil or other loose materials or require all trucks to maintain at least 2 feet of freeboard.
- Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.

- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Enhanced Control Measures – The following enhanced control measures would be required, as necessary, for use at construction sites due to the nature of the contaminated soils on the site and the project's location near sensitive receptors.

- Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Install windbreaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.
- Limit the area subject to excavation, grading, and other construction activity at any one time.

Impact A-2: Construction-Related Emissions of Ozone Precursors from Terrestrial Equipment and Vehicles. BAAQMD includes construction emissions for ozone precursors in their emissions inventory. An emissions estimate for construction activity was developed to analyze the general conformity of the remedial activities with EPA conformity thresholds, since the remedial action is a federal action. This conformity analysis is presented in Appendix E. The estimate for terrestrial construction activity, which is based on conservative assumptions, identifies that remedial activity could generate emissions up to 3 tons per year of ROG and 40 tons per year of NOx during the busiest year of remedial activity. These amounts are less than the EPA conformity thresholds of 50 tons of ROG and 100 tons of NOx. As discussed in Appendix E, actual annual emissions of ozone precursors are likely to be far less than that estimated, due to the use of conservative assumptions and presumptions that more activity would occur simultaneously than would actually occur. Thus, this is considered a less-than-significant impact.

Section 3.9

Noise

Data Sources

The HAAF Disposal and Reuse EIS (U.S. Army Corps of Engineers 1996), the HWRP EIR/EIS (Conservancy 1998), and the ROD/RAP provided the basis for this discussion.

Environmental Setting

Noise-Sensitive Receptors in the Project Vicinity

Residences, hospitals, libraries, recreation areas, and other similar uses are generally considered sensitive to noise. The existing noise-sensitive uses in the project area are as follows.

- The New Hamilton Partnership commercial and residential development is located adjacent to the HAAF.
- The Bel Marin Keys development is located north of the HAAF parcel and would be within approximately 2,600 feet of the construction area (Pile A).
- Hamilton Elementary School is approximately 6,000 feet (1 mile) southwest of the parcel boundary.

Existing Noise Conditions

Existing noise conditions near the project area are governed primarily by the distance from and the amount of traffic on the local roadways. Roadways near the project or potentially affected by the project include U.S. Highway 101, Nave Drive, Bel Marin Keys Boulevard, Ignacio Boulevard, Main Gate Road, North Hamilton Parkway, and State Access Road. Existing noise levels were estimated for the HAAF Disposal and Reuse EIS. Traffic noise levels were determined using the Federal Highway Administration Traffic Noise Prediction Model (FHWA-77-RD-108).

Table 3.9-1 presents the traffic noise level (day-night average sound level [L_{dn}], the average sound exposure over a 24-hour period), expressed in decibels (dB) at a distance of 100 feet from the centerline of the roadway. Distances to the 70, 65, and 60 dB-L_{dn} traffic noise contours are also summarized in Table 3.9-1. The results indicate that U.S. Highway 101 is the dominant source of traffic noise in the project area.

Existing traffic noise at the sensitive receptors described previously has been estimated based on the traffic noise results presented in Table 3.9-1. The traffic noise at each receptor area varies depending on the proximity of the area to U.S. Highway 101. The existing noise level at the City of Novato (New Hamilton Partnership development) and Bel Marin Keys residential development is 45 to 50 dB-L_{dn}.

Table 3.9-1. Summary of Traffic Noise Modeling for Existing Conditions

Roadway	Segment	L_{dn} at 100 feet from Roadway Centerline	Distance (in feet) from Centerline of Roadway to L_{dn} Contour Line for Existing Conditions		
			70 L_{dn}	65 L_{dn}	60 L_{dn}
U.S. Highway 101 (without soundwall)		77	305	658	1,418
U.S. Highway 101 (with soundwall)[a]		72	142	305	658
Nave Drive	U.S. Highway 101 on-ramps to Bolling Drive	58	–[b]	–[b]	76
	Bolling Drive to Main Gate Road	59	–[b]	–[b]	80
	Main Gate Road to State Access Road	59	–[b]	–[b]	89
	State Access Road to northbound U.S. Highway 101 off-ramp	60	–[b]	–[b]	106
	U.S. Highway 101 off-ramp to Ignacio Boulevard	63	–[b]	72	155
Bel Marin Keys Boulevard	U.S. Highway 101 to Digital Drive	66	54	116	249
Ignacio Boulevard	Freeway ramps to Alameda Del Prado	64	–[b]	90	194
	West of Alameda Del Prado	64	–[b]	83	178
Alameda Del Prado	Ignacio Boulevard to Clay Court	60	–[b]	–[b]	96
	South of Clay Court	58	–[b]	–[b]	69
Bolling Drive	East of Nave Drive	53	–[b]	–[b]	32
Main Gate Road	East of Nave Drive	53	–[b]	–[b]	33
State Access Road	East of Nave Drive	52	–[b]	–[b]	28

[a] A soundwall is located on the east side of the freeway between State Access Road and Main Gate Road and reduces noise by about 5 dB.
[b] Contour line does not extend beyond the edge of the roadway.

Noise Standards and Regulations

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different ranges of sound-levels. The following sections summarize those guidelines.

Federal Guidelines

The federal Noise Control Act of 1972 established a requirement that all federal agencies administer their programs to promote an environment free of noise that jeopardizes public health or welfare. EPA was given the responsibility for

- providing information to the public regarding identifiable effects of noise on public health or welfare,
- publishing information on the levels of environmental noise that will protect public health and welfare within an adequate margin of safety,
- coordinating federal research and activities related to noise control, and
- establishing federal noise emission standards for selected products distributed in interstate commerce.

EPA identified indoor and outdoor noise limits to protect against effects on public health and welfare. Outdoor limits of 55 dB-L_{dn} and indoor limits of 45 dB-L_{dn} are specified as desirable to protect against speech interference and sleep disturbance for residential areas and areas with educational and healthcare facilities.

The U.S. Department of Housing and Urban Development has established guidelines for evaluating noise impacts on residential projects. Sites are generally considered acceptable if they are exposed to outdoor noise levels of 65 dB-L_{dn} or less. They are normally classified as unacceptable if they are exposed to levels of 65 to 75 dB-L_{dn}, and levels of exposure of 75 dB-L_{dn} or greater are always classified as unacceptable.

State Guidelines

In 1987, the California Department of Health Services published guidelines for the noise elements of local general plans. These guidelines include a sound level/land use compatibility chart that categorizes various outdoor L_{dn} ranges by land use. These guidelines identify the normally acceptable range for low density residential uses as less than 65 dB and conditionally acceptable levels as 55 to 70 dB.

Local Guidelines

The Marin County General Plan (1994) establishes noise level performance standards for stationary sources for areas within the county. No stationary noise sources would be associated with the proposed project Marin Countywide Plan Policy N-2.4 requires that measures be taken to minimize the exposure of neighboring properties to excessive noise levels from construction-related activity. Under Program N-2.4a, the Marin County Community Development Department reserves the right to set hours for construction-related activities that involve the use of machinery, power tools, or hammering. The Marin Countywide Plan specifies, in general, that residential areas should not be exposed to sound levels greater than 60 dBA. However, this guidance is primarily concerned with the location of new development, rather than temporary construction noise.

The City of Novato's General Plan (2000) has established noise level performance standards for areas within the city (Table 3.9-2). The city's noise ordinance prohibits noise between the hours of 10:00 p.m. and 6:00 a.m. Although the project site is within the city limits of Novato, the site is not under the City of Novato's jurisdiction. Nevertheless, the proposed transportation route off the site and the adjacent residential development are within the Novato city limits.

Table 3.9-2. City of Novato Noise and Land Use Compatibility Standards

Land Use Category	Maximum allowable noise level
Residential Development	Up to 60 dB
Transient Lodging: Motel and Hotel	Up to 60 dB
School, Library, Church, Hospital and Nursing Home	Up to 60 dB
Auditorium, Concert Hall, Amphitheater	Up to 70 dB
Sports Arena, Outdoor Spectator Sports	Up to 70 dB
Playgrounds, Neighborhood Parks, Open Space	Up to 65 dB
Golf Course, Cemetery	Up to 70 dB
Office Building, Business, Commercial and Professional	Up to 70 dB
Industrial, Manufacturing, Utilities	Up to 70 dB

Source: City of Novato General Plan 2000

Environmental Impacts and Mitigation Measures

Analytical Methods

Noise impacts were evaluated by comparing anticipated noise levels with reference noise levels developed by EPA, the distances to sensitive noise receptors, and local noise guidelines. Noise levels were measured in A-weighted decibels (dBA), a composite frequency-weighting scheme that approximates the way the human ear responds to sound.

Impact Mechanisms

There would be two primary sources of noise related to the proposed project:

- truck traffic hauling excavated material and fill/cover material to and from the project site, and
- construction equipment engaged in excavating, filling, and covering in various locations throughout the project site.

Noise impacts to biological resources are addressed in Section 3.4, "Biological Resources."

As described in Chapter 2, trucks would follow an established route from the north end of the project site around the east side of Landfill 26 to Todd's Road, right (north) on North Hamilton Parkway to Nave Drive, and then either left on Nave Drive to get on southbound Highway 101, or right to get on northbound Highway 101.

Implementation of the ROD/RAP would require the use of heavy construction equipment for those areas identified for excavation and offsite disposal and for areas to be covered by clean fill. Table 3.9-3 lists the noise levels produced by various types of construction equipment. Properly maintained equipment will produce noise levels near the middle of the indicated ranges. Activities such as excavation and hauling of materials and offloading and placing dredged materials may occur throughout the project area, depending on the type of remedial action identified for specific sites. The types of construction equipment used for earthmoving typically generate noise levels of 70 to 90 dBA at a distance of 50 feet when the equipment is operating.

Construction equipment operations can vary from intermittent to fairly continuous use, with multiple pieces of equipment operating concurrently. A worst-case construction scenario may consist of concurrent operation of a bulldozer (87 dBA), a backhoe (90 dBA), a grader (90 dBA), and a front loader (82 dBA) in the same general area. Peak construction-period noise from this combination of equipment would be about 94 dBA from the construction site.

Table 3.9-3. Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Rock Drill	98
Roller/Sheep's Foot	74
Scraper	89
Shovel	82
Truck	88

Source: Federal Transit Administration 1995.

Table 3.9-4 summarizes noise levels as a function of distance from an active construction site with the previously described equipment in operation. Episodes of noise levels greater than 60 dBA will occasionally occur at locations within about 1,900 feet of a construction site. Episodes of noise levels greater than 70 dBA will occur at areas within about 750 feet of a construction site.

Table 3.9-4. Estimated Noise near a Construction Site

Distance Attenuation		Distance to dBA Contours	
Distance to Receptor (feet)	Sound Level at Receptor (dBA)	Sound Level at Contour (dBA)	Distance to Contour (feet)
50	94	95	45
100	88	90	79
200	82	85	138
400	75	80	240
600	72	75	417
800	69	70	736
1,000	67	65	1,115
1,500	62	60	1,918
2,000	59	55	2,902
2,500	56	50	4,006
3,000	54	45	5,365
4,000	50	40	7,407
5,280	46	35	8,074
7,500	39	30	8,801

The following assumptions were used:
Basic sound level dropoff rate: 6.0
Atmospheric absorption coefficient: 0.5
Reference noise level: 94
Distance for reference noise level: 50
Notes:
Calculations include the effects of atmospheric absorption at a dropoff rate of 0.5 dB/100 meters.
The effects of local shielding from buildings and topography are not included and will substantially reduce sound levels.
Except for sounds with highly distinctive tonal characteristics, noise from a particular source will not be identifiable when its level is substantially less than background noise levels.

Thresholds of Significance

According to CEQA Guidelines and professional judgment, a project is considered to have a significant noise impact if it would

- increase noise levels to 60 dBA, or
- increase noise levels by 3 dBA in areas where noise levels already exceed 60 dBA.

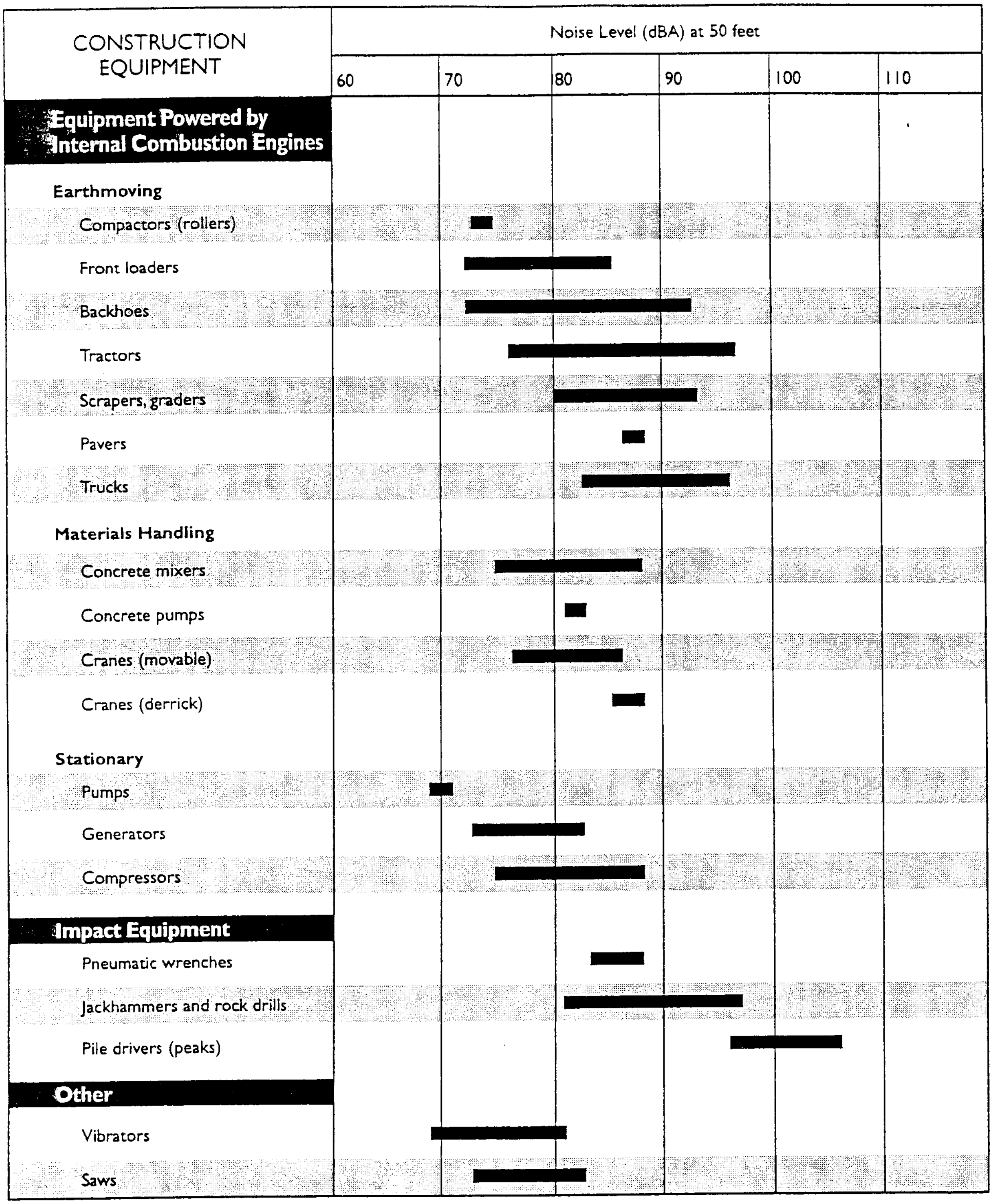
Impacts and Mitigation Measures of the Proposed Project

Impact N-1: Potential Increases in Traffic Noise Levels. Implementation of the project would result in increases in traffic associated with excavation, disposal, and fill activities at the project site. As indicated in Section 3-7, "Transportation," most traffic associated with site clean up would be routed over the proposed access route along Todd Road, North Hamilton Parkway, and Nave Drive (Figure 3.9-1). These activities would generate a low number of daily trips by both construction workers and trucks hauling excavated material and fill/cover material and would not significantly affect noise conditions in the area crossed by the proposed access easement. The impact on sensitive noise receptors as a result of increased construction traffic is considered less than significant.

Impact N-2: Temporary Increases in Noise Levels to More Than 60 dBA during Construction. As described in the discussion of impact mechanisms above, implementation of the proposed action would result in noise levels exceeding 60 dBA at distances as great as 1,900 feet from excavation and other earthworking activities. Sensitive noise receptors within 1,900 feet of construction areas include the New Hamilton Partnership residential and commercial property. The Bel Marin Keys residential area is located more than 1,900 feet from the nearest proposed construction site and noise effects would, therefore, be below the 60 dBA threshold. Although temporary, this impact would be considered significant, requiring mitigation to reduce it to a less-than-significant level.

Mitigation Measure N-1: Employ Noise-Reducing Construction Practices. To reduce noise levels to the maximum extent practicable, the remediation contractor will employ the following noise-reducing construction practices.

- During construction phases, the contractor will ensure that construction is performed in accordance with City noise standards.
- During construction phases, noise generating activities within 300 feet of an occupied residence will only be performed during normal daylight hours (6:00 a.m. to 10:00 p.m.), Monday through Saturday, wherever feasible.
- Mufflers should be kept operable and effective on all construction equipment, generators, and vehicles. All internal combustion engines must be operated with exhaust and intake silencers. Wherever possible, noise-generating construction equipment should be shielded from nearby residences by noise-attenuating buffers such as structures or truck trailers.



Source: U.S. Environmental Protection Agency 1971.

Figure 3.9-1
Construction Equipment Noise Ranges

- Prior to construction within 1,000 feet of residences, written notice should be provided to potentially affected residences identifying the type, duration, and frequency of construction activities. Notification materials will also identify a mechanism for residents to register complaints if construction noise levels are overly intrusive or construction occurs outside the required hours.

- Construction staging area(s) and stockpile areas will be located at least 1,000 feet from occupied residences, or contractors will be required to provide appropriate noise-reducing engine-housing enclosures. Equipment warm-up areas, water tanks, and storage areas should be located in the established staging area or in other portions of the site more than 1,000 feet from existing residences, as feasible.

- Throughout the construction period, the contractor will implement appropriate additional noise mitigation measures, including, but not limited to, changing the location of stationary construction equipment, shutting off idling equipment, rescheduling construction activity, or installing temporary barriers around stationary construction noise sources at the request of the City.

Section 3.10

Cultural Resources

Data Sources

Both the inventory of resources and analysis of project impacts contained in this section are derived from the 1998 HWRP EIR/EIS. The cultural resources analysis contained therein was based on the HAAF Disposal and Reuse EIS (U.S. Army Corps of Engineers 1996), which summarizes information obtained from

- National Register of Historic Places Evaluation of Eight Buildings on Hamilton Army Airfield, Marin County, California, Final Report (PAR Environmental Services 1993a);
- Hamilton Army Airfield Historic District Historic Resources Inventory Forms (PAR Environmental Services 1993b);
- National Register of Historic Places Evaluation, Hamilton Army Airfield Historic District, Marin County, California (Draft) (PAR Environmental Services 1993c);
- National Register of Historic Places Registration Form, Hamilton Army Air Field Historic District, Novato, California (PAR Environmental Services 1994); and
- National Register of Historic Places Registration Form, Hamilton Army Air Field Discontiguous Historic District, Novato, California (PAR Environmental Services 1998).

Environmental Setting

Prehistory of the Area

The project area is located in the former territory of the Coast Miwok, who have inhabited Marin and Sonoma Counties from approximately 5,000 years ago and who live there today. Early inhabitants relied heavily on the resources associated with San Pablo Bay and associated marshes and estuarine environments. Several archaeological sites associated with past use are found near the project area and generally inland of the project site; most are situated above the historic marshlands. The Coast Miwok village of Puyuku is situated within 1 mile of the project site.

Historic Background

The earliest Coast Miwok contact with Europeans is presumed to have occurred in the late 1500s with the voyages of Drake and Cermeno. Missionization, beginning in the late 1700s, forced Native Americans to convert to Christianity, resulting in population displacement and cultural disintegration. Epidemics further reduced native populations.

After Mexico gained its independence from Spain, a series of land claims were granted to the Californios (California citizens of Mexican descent). Rancho San Jose, which contains the HAAF parcel, was granted to Ignacio Pacheco. Livestock grazing associated with the rancho was the predominant agricultural pursuit at that time. With railroad development in the 1870s, Novato and Ignacio became viable agricultural communities. Levee construction and land reclamation in the 1890s increased agricultural options.

HAAF was constructed between 1931 and 1935, specifically as a bombardment base. As one of three such bases in the United States at the time, the airfield played a vital role in the development of air defense mechanisms on the West Coast in the 1930s and in the training and processing of units during the early 1940s.

The use of a Spanish Eclectic architectural style represented a departure from the traditional military approach to base construction, increasing the base's importance. The craftsmanship evident in the original buildings found on base, and the overall layout and landscaping, are also significant. More generic-style temporary buildings that are characteristic of construction methods used during World War II are also found at HAAF.

In 1993, the significance of HAAF was evaluated against the criteria established for the National Register of Historic Places (NRHP) and found to be eligible as a historic district (PAR Environmental Services 1993c). This research has determined that the most significant phase of historical activity at HAAF occurred between the years 1931 and 1946. The boundaries of a historic district were established accordingly to include all areas of the military reservation active during that period.

Within the period of significance for the Hamilton Historic District are two distinct architectural and historical phases: 1931 to 1935 and 1938 to 1946. Between 1931 and 1935, the permanent facilities were constructed and the post was established as a vital component of West Coast air defense. Between 1938 and 1946, the air base underwent a period of dramatic expansion to serve as a staging area for World War II air transport and a postwar reentry facility.

Regulatory Setting

When the Army was directed to dispose of the HAAF, it was obligated to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR Part 800. Compliance with Section 106 requires historic properties (including archaeological, historical, and architectural resources) to be inventoried and evaluated for their eligibility for listing on the NRHP.

The Army's compliance with Section 106 for the Hamilton Army Airfield Historic District was directed by two memoranda of agreement (MOA). The first MOA was executed in April 1994 between the Army, General Services Administration, Advisory Council on Historic Preservation, and State Historic Preservation Officer. The MOA covered the effects of conveyance of the outparcels on historic properties. Subsequently, another MOA was executed between the Army, Advisory Council on Historic Preservation, and State Historic Preservation Officer regarding the effect on historic properties of the disposal and reuse of the BRAC parcels.

Summary of Cultural Resource Investigations

The results of previous studies in the area of potential effects (APE) for the proposed project are described below. As described below, the APE for the proposed project includes the APE studied for the 1998 HWRP EIR/EIS, as well as the additional area CSM adjacent to San Pablo Bay.

Archaeological Studies

Numerous archaeological investigations have been conducted within the boundaries of the Hamilton installation (Archaeological Consulting and Research Services 1979a, 1979b; Archaeological Resource Service 1991; Baker and Salzman 1980; Chavez 1986; Desgrandchamp and Clark 1978; Flynn 1978; PAR Environmental Services 1989). Portions of the APE for the project have been surveyed. Unsurveyed portions of the APE are fill, with little or no potential to contain cultural resources. No known archaeological sites were found on any of the parcels subjected to disposal and reuse (Archaeological Consulting and Research Services 1979a, 1979b; Chavez 1986).

Architectural Studies

HAAF has been the subject of numerous architectural investigations. In 1993, the research culminated in a complete inventory of the site (PAR Environmental Services 1993b) and the preparation of a determination of eligibility (DOE) report (PAR Environmental Services 1993c) and draft NRHP nomination for the

Hamilton Army Airfield Historic District (PAR Environmental Services 1993d). The DOE report presents the historical context for the air base, a thorough documentation of the cultural landscape at HAAF, and the evaluation of the district's eligibility for listing on the NRHP as specified in 36 CFR 60.4.

In April 1998, PAR Environmental Services conducted a reevaluation of the DOE and prepared the NRHP registration form for the Hamilton Historic District (PAR Environmental Services 1998). The result of this reevaluation was a reduction in the area encompassed by the district. The district boundaries are currently outside the footprint of the proposed wetland restoration project.

Disposal and reuse of HAAF was determined to have an adverse effect on the integrity and research potential of the historic district as a whole. To mitigate this impact, the Army is implementing mitigation measures stipulated in the MOA for other Army actions, namely the conveyance of the outparcels and BRAC parcels. These mitigation measures include preparing historical documentation, developing two video productions on the history of the former HAAF, completing a nomination to the NRHP, preparing a museum interpretive plan and brochure for the Novato Historical Guild, and preparing written and photographic documentation of the historic district for submittal to the Library of Congress, in accordance with the requirements of the Historic American Building Survey. (PAR Environmental Services 1998)

To further mitigate the transfer of historic properties, the Army has developed an interpretive display to illustrate to the public the history and significance of the district. This exhibit includes a transportable modular display, interpretive materials illustrating the historical and architectural significance of Hamilton Historic District, and a portable television and videocassette recorder for viewing the videos. The exhibit was designed to be presented at professional meetings, Army functions, and in other public venues, including the Novato Historical Guild.

To supplement historical research conducted to date, the Army is conducting oral history research to document the experiences of personnel formerly stationed at the installation. This information will be used as part of both the Novato Historical Guild's museum and the Army's mobile interpretive display.

Summary of Cultural Resources in the APE for the Proposed Project

For the purposes of the 1998 HWRP EIR/EIS, the HAAF parcel was surveyed for cultural resources, and no known prehistoric or historic archaeological resources were present (Archaeological Consulting and Research Services 1979a, 1979b; Chavez 1986; Environmental Science Associates 1993). No portions of the proposed revised Hamilton Historic District are within the APE for the HWRP (PAR Environmental Services 1998).

Although the potential for these parcels to contain prehistoric or historic resources is considered low, resources may exist beneath the surface. The 1998 APE did not include the outermost portion of the coastal salt marsh area wherein some of the proposed remedial actions would occur (e.g., the outfall drainage ditch, east levee construction debris disposal area burn pit, the former sewage treatment outfall, and a portion of the high marsh non-channel cut area). It is assumed that this portion of the project area is the same as coastal salt marsh that was included in the 1998 APE and that the potential for occurrence of prehistoric resources is low.

Environmental Impacts and Mitigation Measures

Thresholds of Significance

CEQA defines a significant historical resource as "a resource listed or eligible for listing on the California Register of Historical Resources" (Pub. Res. Code, Section 5024.1). For a historical resource to be eligible for listing on the California Register of Historical Resources, it must be significant at the local, state, or national level under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2. It is associated with the lives of persons important to local, California, or national history;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Historical resources automatically listed on the California Register of Historical Resources include those historic properties listed on, or formally determined eligible for listing on, the NRHP.

Based on archival research and field investigations, the project area does not appear to have a high potential for the inadvertent discovery of archaeological resources, and no significant architectural resources are known to exist on site. Therefore, it is not expected that any cultural resources would be affected with implementation of the proposed project. Because remediation activities would involve ground disturbance, however, the project may result in impacts to previously undiscovered archaeological resources.

Impacts and Mitigation Measures of the Proposed Project

Impact CR-1: Potential Impacts to Buried Cultural Deposits or Human Remains. Remedial activities may encounter unexpected buried cultural deposits or human remains. This impact is considered potentially significant. To reduce this impact to a less-than-significant level, the following mitigation measures would be implemented.

Mitigation Measure CR-1: Stop Work if Buried Cultural Deposits Are Encountered during Remedial Activities. If buried cultural resources, such as chipped stone or groundstone, historic debris, building foundations, or human bone, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within a 100-foot radius of the find until a qualified archaeologist can assess the significance of the find.

Mitigation Measure CR-2: Stop Work if Human Remains Are Encountered during Remedial Activities. If human skeletal remains are encountered, the county coroner will be contacted immediately. If the county coroner determines that the remains are Native American, the coroner will then be required to contact the Native American Heritage Commission (NAHC) (pursuant to Section7050.5 (c) of the California Health and Safety Code) and the County Coordinator of Indian Affairs. A qualified archaeologist will also be contacted immediately.

If any human remains are discovered in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until

- the county coroner has been informed and has determined that no investigation of the cause of death is required; and if the remains are of Native American origin,
  - the descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or
  - the NAHC was unable to identify a descendent or the descendent failed to make a recommendation within 24 hours after being notified by the commission.

According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the NAHC.

Chapter 4
Alternatives

Introduction

CEQA Guidelines Regarding Alternatives

Section 15126.6 of the CEQA Guidelines specifies the following requirements for an EIR.

> (a) An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project.
>
> (b) Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
>
> (c) The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts
>
> (d) The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be

caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

(e)(1) The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.

(e)(2) The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

(f) The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project.

(f)(1) Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent).

(f)(2)(C) Where a previous document has sufficiently analyzed a range of reasonable alternative locations and environmental impacts for projects with the same basic purpose, the lead agency should review the previous document. The EIR may rely on the previous document to help it assess the feasibility of potential project alternatives to the extent the circumstances remain substantially the same as they relate to the alternative.

Prior Alternative Analysis Related to Land Use and Restoration at the Hamilton Army Airfield Site

Three prior EIRs/EISs have analyzed a broad range of alternatives relative to land use and restoration at the HAAF site. These are discussed below along with their relevance to the alternatives analysis in this subsequent EIR.

Environmental Impact Statement, Hamilton Army Airfield Disposal and Reuse (U.S. Department of the Army 1996). BRAC directed the Department of Defense to close and dispose of HAAF. Accordingly, the Army evaluated the environmental impacts of disposal and reuse of HAAF in an EIS completed in 1996. It provided an analysis of specific BRAC actions and their environmental effects as required by NEPA. Three alternatives were evaluated in the Army's Disposal and Reuse EIS: no action, disposal without encumbrances, and disposal with encumbrances. The Army identified disposal with encumbrances as its preferred alternative.

The Army prepared a ROD on disposal and reuse in 1997. The ROD indicates that, as part of the disposal process at HAAF, the Army presently requires new owners to maintain the encumbrances, including maintenance of the Landfill 26 wetland mitigation site, continuation of access easements provided to the Novato Sanitary District and the SLC, and provision of a perpetual easement for a flood control levee granted to the New Hamilton Partnership.

Although reuse was not part of the Army's action of disposal, the EIS also disclosed impacts that could occur as a result of the reuse of HAAF. Reuse scenarios evaluated in the EIS included mixed-use development, institutional development, open space with constructed wetland restoration, and open water with natural wetland formation. The reuse scenarios that the Army considered in the EIS were based on the local reuse planning efforts through the Hamilton Reuse Commission appointed by the Novato City Council. The Commission's preferred uses of HAAF were wetlands, wetlands with other uses, and low-density mixed-use development. The ROD for the Disposal and Reuse EIS did not indicate a preferred reuse scenario and indicated that evaluation and approval of an official reuse plan would be the responsibility of local planning authorities.

Relevance to current subsequent EIR - The Disposal and Reuse EIS adequately analyzed alternatives related to the disposal of HAAF and selected the preferred alternative for disposal. This prior EIS, including its discussion of alternatives, is incorporated by reference. Thus, alternatives for disposal are not considered further in this subsequent EIR.

Hamilton Army Airfield Reuse Plan (City of Novato 1996). After the Army completed the EIS on the disposal and reuse of HAAF, the City of Novato adopted a reuse plan for the former Hamilton Air Force Base. The reuse plan included HAAF and indicated a preferred reuse of the area as open space and wetlands. The reuse plan established goals and policies for planning areas throughout the former Hamilton Air Force Base, including the HAAF parcel. The plan identified development of wetlands as the goal for reuse of the HAAF parcel.

Relevance to current subsequent EIR - The reuse plan eliminated from consideration other uses of the HAAF parcel, such as residential or commercial development and aviation. As such, alternative land uses other than open space and wetlands are not considered further in this subsequent EIR.

Hamilton Wetland Restoration Project Final EIR/EIS (U.S. Army Corps of Engineers and State Coastal Conservancy 1998). Because alternative land uses were addressed by the reuse plan, the environmental impact analysis contained in the HWRP EIR/EIS focused on alternatives for restoration of wetlands in the HAAF and SLC parcels. The project objectives could be attained by restoring wetlands either through the process of natural sedimentation or by actively placing dredged material on the site.

Four wetland restoration alternatives were evaluated in the prior EIR/EIS. These alternatives include restoration of wetlands in the following areas by the following means:

- No-Action Alternative (HWRP Alternative 1);
- HAAF parcel by natural sedimentation (HWRP Alternative 2);
- HAAF parcel using dredged material (HWRP Alternative 3);
- HAAF and SLC parcels by natural sedimentation (HWRP Alternative 4); and
- HAAF and SLC parcels using dredged material (HWRP Alternative 5).

The project alternatives were evaluated at an equal level of detail. Conservancy staff and the U.S. Army Corps of Engineers selected HWRP Alternative 5 as their preferred alternative because it best meets the project goal and objectives and provides greater diversity of habitat.

Relevance to current subsequent EIR – The HWRP EIR/EIS adequately analyzed alternatives for wetland restoration at HAAF (and SLC parcel). This document is a subsequent document to the original EIR/EIS focused on the ROD/RAP only. Thus, wetland restoration alternatives are not considered further in this subsequent EIR.

Project Objectives and Goals

The goal of the HAAF Main Airfield Parcel ROD/RAP is to remove and/or cover contamination in the inboard area, rendering it suitable for open-space wetland restoration. For the coastal salt marsh, the objective is to remove contaminated soils to the maximum extent practical to protect public health and to maintain its wetland function. The ROD/RAP has been developed and would be implemented in support of the HWRP Therefore, the goal of the HWRP to "create a diverse array of wetland and wildlife habitats at HAAF that benefits a number of endangered species as well as other migratory and resident species" is implicit in the goal of the ROD/RAP.

One of the key objectives of the HWRP is "to recognize existing site opportunities and constraints, including the runway and remediation of contaminated areas, as integral components of design." Pursuant to this objective, the ROD/RAP proposes specific remedial action strategies at each site of known contamination in the main airfield and the coastal salt marsh that are fundamentally related to the establishment and long-term development of the wetland. The ROD/RAP defines target cleanup levels for contaminants that are protective of potential wetland receptors. Remedial actions are designed to ensure that target levels for all contaminants are achieved based on contaminant type, risk to human or ecological health, and the potential exposure pathways.

Target levels will be maintained following remediation and during construction, establishment, and long-term development of the wetland.

The ROD/RAP has been developed with the ultimate view toward wetland restoration on the site pursuant to the HWRP and directly or indirectly supports other objectives of the HWRP, which are described in Chapter 2.

Nature of Proposed Project

Introduction

The proposed HAAF Main Airfield Parcel ROD/RAP documents the selected environmental response actions to be taken to address potential risks associated with residual contaminants on the main airfield parcel and the adjacent coastal salt marsh, and restoration of a wetland at HAAF. The ROD/RAP summarizes the following:

1. Lists those sites that have been investigated during the remedial investigation and those that require further investigation.
2. Establishes target cleanup levels (action goals) for all contaminants on the property based on an assessment of the human and ecological risk for each contaminant during construction and maturation of the wetland.
3. Identifies the goals (Remedial Action Objectives [RAOs]) that each remedial action is intended to achieve in terms of protecting human health and the environment by removing or reducing residual contaminants to their respective action goals or eliminating exposure to contaminants.
4. Describes the selected response actions (remedial strategies) for each site in order to achieve the RAOs.

Chapter 2 identifies the remedial strategies for each site included in the proposed project.

Alternatives Considered during Development of ROD/RAP

Unlike many other projects subject to CEQA, alternative options for residual contamination at sites at the HAAF and coastal salt marsh have been considered extensively before commencement of the formal CEQA process. This consideration of alternatives is summarized below.

Army BRAC Sites

The ROD/RAP summarizes the prior investigations, identifies the need for remedial action, and fully develops and evaluates alternatives for each Army BRAC site that requires remedial action. The ROD/RAP evaluates

- ROD/RAP Alternative 1, No Further Action;
- ROD/RAP Alternative 2, Excavation and Offsite Disposal; and
- ROD/RAP Alternative 3, Manage In Situ, with Monitoring and Maintenance for Army BRAC Sites.

ROD/RAP Alternative 4 was developed specifically for issues that will be addressed by the HWRP and is not evaluated for the Army BRAC sites. The Army BRAC program will perform the environmental response actions for the Army BRAC sites that require remedial action. The consideration of alternatives in the ROD/RAP and the summary of consideration of alternatives in prior documents (such as the feasibility studies) are incorporated by reference.

As discussed below, the remedial process has already considered a range of alternatives for residual contamination at Army BRAC sites, and no additional feasible alternatives beyond those addressed in the ROD/RAP have been identified for the subsequent EIR. However, unlike the ROD/RAP, this subsequent EIR considers application of a single alternative for all sites for the purposes of disclosure and discussion, a conceptual on-site treatment alternative for organic contaminants, and an engineered cap alternative. As discussed below, all of these alternatives are either considered infeasible, unnecessary to achieve the project goals, or ineffective for purposes of substantially avoiding or lessening significant impacts of the proposed project.

Other Army BRAC Environmental Concerns

In addition to issues surrounding the Army BRAC sites identified above, three other environmental concerns are addressed in the ROD/RAP by the Army BRAC program. These issues include

- a group of four sites identified by the ASR,
- the GSA/BRAC soil stockpiles located on the runway, and
- radiological cylinders.

The ASR sites addressed in this ROD/RAP include: Testing Range (ASR Site #4); Alleged Hazardous, Toxic, and Radiological Waste Disposal Site (ASR Site #8); Skeet Range (ASR Site #18); and Firing-In-Butt (ASR Site #19). One of the four ROD/RAP remedial strategies will be applied at these sites once sufficient information is available. Thus, this alternatives analysis includes these sites like any other ROD/RAP site.

The RWQCB will determine what additional actions (if any) may be required with respect to the GSA/BRAC stockpiled soil currently on the runway. As it is presently unknown whether any additional actions may be required, no alternatives are considered for this issue in the ROD/RAP.

No environmental concerns were identified for the radiological cylinders (see the ROD/RAP). Therefore no remedial action is proposed for this issue and no remedial alternatives are considered further in the ROD/RAP or in this subsequent EIR.

Hamilton Wetland Restoration Project Issues

The Army Civil Works Program, through the HWRP, will take actions described in this ROD/RAP to address the potential risks posed by the following environmental issues:

- Inboard Area-Wide DDTs,
- PAHs in soil adjacent to the runway, and
- LBP.

For the Inboard Area-Wide DDTs and PAHs in soil adjacent to the runway, the ROD/RAP evaluates two alternatives: Alternative 1, No Further Action; and Alternative 4, Manage Onsite, with Monitoring and Maintenance for the Army Civil Works Program. Alternative 4 was specifically developed for issues that will be addressed by the Army Civil Works Program through the HWRP. Alternatives 2 and 3 were not considered in the ROD/RAP because they apply only to sites being addressed by the Army BRAC program. In addition to the ROD/RAP-identified alternatives, an excavation alternative is considered in this subsequent EIR for these concerns, as discussed in this analysis of alternatives.

To address possible soil contamination from LBP at current and previously demolished building locations, the ROD/RAP selected the following alternative:

> The HWRP will provide 3 feet of stable cover over the footprint of the building and to a distance of 6 feet beyond the building footprint. If 3 feet of cover cannot be achieved, the soil area at these current and previously demolished building locations, plus 6 feet beyond the building perimeter, will be scraped to a depth of 6 inches and managed elsewhere on site beneath 3 feet of stable cover. The building foundation and any concrete/asphalt/hard foundation surface adjacent to the building may remain.

No other alternatives were considered or evaluated in the ROD/RAP. In addition to the ROD/RAP-selected alternative, this subsequent EIR considers an excavation alternative for LBP in this analysis of alternatives.

Alternatives Suggested During the Scoping Process for this EIR

The NOP for the Hamilton ROD/RAP was issued on April 11, 2003. Written comments were received by the Conservancy subsequent to issuance of the NOP. A scoping meeting was held on May 1, 2003, but the single individual who attended the scoping meeting suggested no alternatives. No alternatives were suggested in written comment on the NOP.

Significant Environmental Impacts of the Proposed Project

As noted above, CEQA Guideline 15126.6 (f) states "alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." As such, alternatives that do not avoid or substantially lessen significant effects of the project do not need to be analyzed in an EIR.

Chapter 3 presents the assessment of environmental impacts of the proposed project. The analysis in this subsequent EIR identifies environmental impacts to the following resource areas.

- Geology, Seismicity, and Soils – No significant impacts would occur.
- Water Resources – No significant impacts would occur.
- Public Health – No significant impacts would occur.
- Biological Resources – Direct and indirect impacts may occur to sensitive species from remedial activities in the coastal salt marsh, adjacent to brackish marsh, and in inboard areas. Temporary and permanent loss of coastal salt marsh habitat may be sustained as a result of excavation and disposal of residual contamination in the coastal salt marsh area.
- Land Use and Public Utilities – No significant impacts would occur.
- Hazardous Substances and Waste – No significant impacts would occur.
- Transportation – A significant and unavoidable impact would occur from the addition of traffic to State highways that currently operate at level of service F during peak periods.
- Air Quality – Potential short-term air quality impacts (PM_{10}) may occur as a result of remedial activities.
- Noise – Potential short-term noise impacts may occur to sensitive receptors in the area as a result of equipment used to conduct site cleanup activities.
- Cultural Resources – Potential impacts to cultural resources may occur as a result of ground-disturbing activities.

Methods for Screening Alternatives

A range of alternatives was considered after analysis of the prior remedial documents, the ROD/RAP, input provided in scoping comments, the results of the impact analysis in Chapter 3, and the cumulative impact analysis in Chapter 5.

While the number of conceivable alternatives that might be considered for a project of this nature is vast (due to the number of sites), the range of alternatives considered was determined to represent a reasonable range for the purposes of analysis, considering the nature of the proposed project and the significant impacts identified.

Alternatives were then screened for their feasibility, their ability to meet project objectives, and their potential to avoid or substantially reduce significant impacts of the project. Alternatives that were determined to be infeasible, to fail to meet at least some of the project objectives, to be remote or speculative, or to ineffectively avoid or substantially lessen the significant impacts of the proposed project were dismissed from further consideration. Alternatives determined to be feasible or potentially feasible, to meet project objectives, and to have some potential to avoid or substantially lessen the significant impacts of the proposed project were then analyzed for their environmental impacts.

Alternatives Analysis

Alternatives considered in this subsequent EIR are discussed below, including both those dismissed from further consideration and those analyzed.

Summary of Alternatives Considered

There are no locational alternatives for the proposed project because the project consists of remedial options for sites located at HAAF and the coastal salt marsh. All alternatives relate to different means of addressing residual contamination in support of the HWRP.

The alternatives initially considered for analysis in this subsequent EIR included

- SEIR Alternative 1. No Project,
- SEIR Alternative 2. Excavation and Off-Site Disposal at All Sites,
- SEIR Alternative 3. In-Situ Management of All Sites,
- SEIR Alternative 4. On-Site Management/Consolidation,
- SEIR Alternative 5. On-Site Excavation and Treatment of Organic Contaminants, and

- SEIR Alternative 6. Engineered Cap Alternative.

Each of these is described below.

SEIR Alternative 1. No Project

Analysis of the No-Project Alternative is required by CEQA. Functionally, this alternative has been evaluated during development of the ROD/RAP on a site-by-site basis. The No-Project Alternative consists of no further remedial action at all of the identified remedial sites at HAAF and the coastal salt marsh that are addressed in the ROD/RAP.

Under this alternative, the present effects of residual contamination at the coastal salt marsh sites in terms of ecological exposure would continue unaltered. Any inboard sites identified with residual contamination above the remedial action goals would not be excavated, managed in situ, or managed on-site.

A fundamental planning objective of the remedial process has been cleanup of the HAAF site to ensure its suitability for wetland reuse. Were this not to occur, the outcome would be that the HWRP would not be implemented. In that event, the only reasonably foreseeable action in the short term would be that the HAAF parcel would remain as it presently is, pending future determinations about land use and remediation.

The No-Project Alternative would include no construction activity. Thus, any impacts of the proposed project related to loss of existing coastal salt marsh habitat, disruption to existing biological resources, temporary sedimentation, construction dust, construction noise, and construction traffic would be avoided.

SEIR Alternative 2. Excavation and Off-Site Disposal for All Sites

Functionally, this alternative has been evaluated during development of the ROD/RAP for all Army BRAC sites on a site-by-site basis. SEIR Alternative 2 considers the application of this alternative to all identified inboard and coastal salt marsh sites with residual contamination above the remedial action goals.

For the coastal salt marsh sites, this alternative would not be different than the proposed project, because the ROD/RAP selected excavation and off-site disposal for residual contamination above the RAOs for coastal salt marsh sites. Thus, biological impacts of excavation in the coastal salt marsh would be the same as the proposed project.

For the inboard sites, inboard PAHs/DDTs, and inboard LBP, this alternative would increase significantly the amount of excavation and transport of contaminated soil compared to the proposed project. This alternative would remove all contamination above the RAOs regardless of the ultimate cover that might be achievable by the HWRP design. Depending on the depth of contamination, complete removal may not always be achievable at all sites.

This alternative would support the objective of cleaning up the site suitable to wetland reuse the same as the proposed project and is considered technically feasible.

This alternative would increase significantly the construction impacts of excavation. Although the specific amount of excavated and transported soil has not been quantified, it would be substantially larger than the proposed project, resulting in increased construction emissions and dust, increased construction noise, and increased construction traffic. As describe in the ROD/RAP, the estimated maximum volume of soil to be excavated, moved, or managed relative to the area-wide DDT and PAH issues is 871,000 cubic yards. Presuming an average dump truck load of 20 cubic yards, approximately 44,000 dump truck trips would be required to transport this soil off site. The estimated volume of contaminated soil for the ROD/RAP is between 40,000 and 50,000 cubic yards, requiring up to 2,500 truck trips. Using the estimates noted above, this alternative could result in approximately 17 times the amount of truck traffic.

The cost of this alternative has not been quantified. However, since this approach would require excavation at the inboard sites where the ROD/RAP selected in-situ or on-site management, at all areas of PAH and DDT contamination above RAOs, and at all areas where LBP is a concern, the cost would be substantially more than the proposed project.

This alternative would not avoid or substantially lessen the significant impacts identified for the proposed project. This alternative would make the site suitable for wetland reuse. This alternative would substantially increase construction impacts related to air quality, noise, and traffic, and would cost substantially more than the proposed project.

Alternative 3. In-Situ Management of All Sites

Functionally, this alternative has been evaluated during development of the ROD/RAP on a site-by-site basis for all Army BRAC sites. SEIR Alternative 3 considers the application of this alternative to all identified inboard and coastal salt marsh sites with residual contamination above the remedial action objectives. This alternative would therefore only partially support cleanup of the site so that it is suitable for wetland reuse.

For the coastal salt marsh sites, this alternative would be the same as the No-Project Alternative. Thus, existing ecological exposure to residual contaminants at these sites would continue.

For the inboard sites, preliminary geomorphic modeling of the conceptual HWRP design has indicated that primary channels would result in substantial tidal scour of the placed dredge material. Thus, for sites where ultimate tidal scour would remove all of the cover to the horizon of residual contamination (above action goals), this alternative would result in ecological exposure to that residual contamination. This alternative would increase the potential for ecological exposure to residual contamination compared to the proposed project, because it would not remove any residual contamination in the coastal salt marsh or in inboard sites that might be ultimately exposed with implementation of the HWRP.

Excavation effects on biological resources in the coastal salt marsh would not occur under this alternative, although residual exposure would remain. For the inboard sites, inboard PAHs/DDTs, and inboard LBP, this alternative would reduce the amount of excavation and transport of contaminated soil compared to the proposed project, resulting in decreased construction emissions and dust, decreased construction noise, and decreased construction traffic.

The cost of this alternative would be less than the proposed project and this alternative is technically and economically feasible.

This alternative would increase the potential for ecological exposure to residual contamination compared to the proposed project, would eliminate short-term biological impacts due to excavation in the coastal salt marsh, and would reduce construction impacts related to air quality, noise, and traffic, and is feasible. Because this alternative does not clean up the site pursuant to the wetland reuse, it does not meet the project objectives overall.

Alternative 4. On-Site Consolidation/Management

This alternative was previously evaluated in the FFS for the inboard sites (CH2M HILL 2001). SEIR Alternative 4 considers the application of this alternative to all identified inboard and coastal salt marsh sites with residual contamination above the remedial action goals.

Under this alternative, areas where residual contamination is greater than chemical-specific RAOs and sufficient stable cover is not practical would require removal through excavation and transport of the removed material to an on-site consolidation/disposal area. The consolidation/disposal area is presumed to require conformance to the substantive requirements of Title 23 and Title 27 regulations for waste management units. Depending on characterization of residual material on site, the consolidation site would have to meet the requirements for either a Class I (hazardous waste) or Class II (designated waste) landfill, or both if there were separable units. For the purposes of this alternatives analysis only, it is assumed that the consolidation/disposal site would require the following: at least a 2-foot clay liner or a synthetic liner; a leachate collection and removal system; closure through installation of an engineered cap; maintenance of the site for cover-integrity; and maintenance of the leachate collection and removal system. Title 23 and Title 27 requirements also mandate that new landfills must be designed so that contained wastes are a minimum of 5 feet above the highest anticipated elevation of underlying groundwater. Given these requirements, the consolidation/disposal site would need to be in a non-tidal area and would need to be separated from areas to be restored to seasonal wetlands. Groundwater varies from 0 to 8 feet below ground surface, but is of poor quality due to the influence of San Pablo Bay. It is possible that any new landfill would need to place clean fill beneath the landfill itself to meet Title 23 and 27 requirements.

For the coastal salt marsh sites, this alternative would be the same as the proposed project. Residual contamination in the coastal salt marsh would have to be excavated and moved to the inboard area. Thus, biological impacts of excavation in the coastal salt marsh would be the same as the proposed project.

This alternative would require the excavation and movement of contaminated soils from the inboard areas that would be exposed by tidal scour with implementation of the HWRP. The amount of excavated soils from inboard BRAC sites would be the same as the proposed project; however, soils excavated from inboard BRAC sites would be managed on-site in the consolidation unit instead of disposing of them at an off-site location. For the inboard BRAC sites, this alternative would reduce the amount of transport of contaminated soil off-site compared to the proposed project. For the area-wide DDTs and area-wide PAHs, this alternative is presumed to be the same as the proposed project, given that the potential volume of the soil from these areas could make the consolidation unit so large that it would significantly hinder the wetland project.

This alternative would increase on-site manipulation during construction due to construction associated with the establishment of permitted waste management and potentially due to increased soil movement. This increased on-site manipulation would somewhat offset the decreased air and noise resultant from elimination of transportation of contaminated soils off-site. Construction traffic impacts off-site would be less than the proposed project (there would still be traffic, but not soil transport traffic).

This alternative would require an increase in on-site management relative to the on-site consolidation/disposal unit. The cost of this alternative has not been quantified. Off-site transportation and disposal costs would be eliminated but cost savings (relative to the proposed project) would likely be offset by the costs of design, permitting, and management for the presumed waste management unit on site.

This alternative would meet the objective of cleaning up the site to be suitable for wetland reuse and is technically feasible, as is the proposed project. However, this alternative would not meet the HWRP objective to "design and engineer a restoration project that stresses simplicity and has little need for active management" because of the active management associated with the waste management unit on site. The amount of restored wetlands would be less than the proposed project because the waste management unit would consume some of the available restoration space. Opposition might also be encountered to the issuance of a permit for a designated waste management unit on the BRAC property adjacent to planned trails, existing habitat areas (i.e. Pacheco Pond), and the restoration area itself. This alternative would lower off-site transport-related traffic impacts, but would not otherwise avoid or substantially lessen other impacts of the proposed project. This alternative would require additional on-site construction, which would increase associated dust and noise impacts on site. A variant of this alternative would be to excavate and remove only the soils containing contaminants at concentrations above hazardous water levels and to manage on site all other residual contamination soils above RAOs where stable cover cannot be assured. This variant would eliminate the need to permit any portion of the site as a Class I facility.

Alternative 5. In-Situ or On-Site Treatment of Organic Contaminants

Organic contaminants identified at inboard and coastal salt marsh sites above remedial action objectives include PAHs, TPH, and DDTs. SEIR Alternative 5 considers in-situ or on-site treatment of these organic contaminants for certain inboard sites with residual organic contamination above the remedial action goals.

There are a number of potential treatment technologies for these organic contaminants. Some of these treatment options include: vapor extraction and biological treatment of petroleum hydrocarbons; soil washing, incineration, and biotreatment for PAHS; and incineration, solvent extraction, and chemical oxidation for DDTs.

For the coastal salt marsh sites, all sites include a number of heavy metals as contaminants of concern. Thus in-situ or on-site treatment is not considered feasible for these sites and the ROD/RAP remedy would need to be implemented. Thus, biological impacts of excavation in the coastal salt marsh would be no less than the proposed project.

For the inboard sites wherein residual contamination above action goals consists solely of treatable organic contaminants, this alternative would consist of either in-situ treatment or excavation and transportation to an on-site treatment location. For sites wherein contaminants not amenable to treatment (e.g., heavy metals) are present at levels above the action goals, the ROD/RAP selected option would need to be implemented.

This alternative would meet the objective of cleaning up the site so that it is suitable for wetland reuse the same as the proposed project. However, depending on the treatment option selected, the duration of remedial actions could be longer than the proposed project.

This alternative could include an amount of excavation similar to the proposed project. Where in-situ remediation of certain areas of contamination is feasible, however, overall excavation levels might be less than the proposed project. This alternative would reduce the transportation of contaminated soils off-site relative to the proposed project since some organic-contaminated soil would be treated on-site or in situ.

The cost of this alternative has not been quantified. In-situ management may require lengthier remedial action than the ROD/RAP selected remedies. Many of the treatment technologies for organic contaminants (such as incineration) are expensive and can engender separate concerns of their own (such as emissions).

This alternative would not avoid or substantially lessen the significant impacts identified for the proposed project, apart from producing a reduction in off-site soil transport traffic and traffic emissions. This alternative would likely increase overall costs of remediation, might involve additional impacts (depending on treatment technology), and might delay implementation of the HWRP.

Alternative 6. Engineered Cap of All Sites

SEIR Alternative 6 considers placement of an engineered "cap" at all identified inboard and coastal salt marsh sites with residual contamination above the remedial action objectives. For the purposes of this alternative analysis only, the "cap" is presumed to consist of an upper vegetation layer, a low permeability layer, and a foundation layer. The low permeability layer is presumed to consist of fine-grained soils such as low permeability clay. Synthetic material could also be used as an "impermeable" barrier in conjunction with or separate from natural materials. The foundation layer is presumed to consist of worked and compacted existing consolidated soils.

For the coastal salt marsh sites, this alternative would include the placement of material impervious to tidal scour and erosion over all residual contamination above the action goals. Practically, this would mean placement of material capable of containing contaminated soils and of being resistant to long-term erosion. The "cap" material would need to isolate the residual contamination both vertically (on top) and horizontally (around its circumference). This could permanently convert some of these areas from tidal marsh because the top grade of the cap material would be at a higher elevation than the current sediment, creating dissimilar islands within the coastal salt marsh. Also, the feasibility of any sediment stabilizing over all of the cap material, and thus of revegetation, is unknown. The long-term stability of any such cap in a tidal environment has not been assessed. The biological impacts of this alternative on the coastal salt marsh would likely be greater than the proposed project because more permanent losses of marsh would probably occur.

This alternative, if feasible, could lower the potential for ecological exposure to residual contamination at some of the coastal salt marsh sites compared to the proposed project. The only lowering of potential would be at any coastal salt marsh sites where excavation of residual contamination above the action goals is not ultimately feasible. Whether this alternative would substantially lessen the potential exposure at these sites is considered speculative.

For the inboard PAHs/DDTs, this alternative is not considered feasible because of the extensive areas of concern and the possibility that the extensive placement of impervious material could hinder marsh formation and could undermine the feasibility of the overall HWRP design. Thus, for these concerns, this alternative presumes management on site, as does the proposed project.

If impervious material were placed to cap residual contamination at sites located in areas of primary tidal channels or other substantial tidal scour, channel formation (in terms of depth) would be hindered vertically. This outcome could result in muted tidal exchange and/or diversion of tidal channel formation into other parts of the HAAF parcel. Both of these effects could negatively affect the success of the HWRP in creating viable tidal marsh. Thus, this alternative presumes excavation of residual contamination above RAOs in the inboard BRAC sites expected to be exposed by scour and transport off site, which is the same as the proposed project.

For other inboard sites and inboard LBP that are not in the path of expected tidal scour, this alternative is technically feasible. This alternative overall would meet the objective of cleaning up the site to make it suitable for wetland reuse to the same extent as the proposed project.

This alternative would increase significantly the construction impacts related to placement of cover material. Some off-site transportation of soil would be decreased for coastal salt marsh sites, relative to the proposed project. However, the amount of imported material, while not quantified, could be considerable and thus no substantial lowering of construction-related air quality, noise, or traffic impacts is identified. The cost of this alternative has not been quantified. However, the design and implementation of the caps at coastal salt marsh and some of the inboard sites is likely to result in the overall costs being greater than the proposed project.

This alternative would not avoid or substantially lessen the significant impacts identified for the proposed project. This alternative may lower the potential for ecological exposure at certain sites in the coastal salt marsh if it is not feasible to entirely excavate residual contamination above RAOs, although this is somewhat speculative. Cost for this alternative is likely to be greater than for the proposed project.

Chapter 5

Other Required CEQA Analyses

This chapter addresses other required analyses of the proposed ROD/RAP as required by CEQA, including cumulative impacts, growth inducement, and significant irreversible environmental changes.

Cumulative Impacts

Requirements for Analysis

Section 15130 of the State CEQA Guidelines requires a reasonable analysis of the significant cumulative impacts of a proposed project. *Cumulative impact* refers to "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." The cumulative impact that results from several closely related projects is:

> the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (State CEQA Guidelines, Section 15355[b]). The cumulative impact analysis may be less detailed than the analysis of the project's individual effects (State CEQA Guidelines Section 15130[b]).

Approach to Cumulative Impact Analysis

The methodology used to develop the cumulative impact analysis included reviewing the current general plans for the City of Novato and Marin County, the *Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project SEIR/S* (Jones & Stokes 2003), the *Hamilton Army Wetland Restoration Plan Final EIR/EIS* (Conservancy 1998), the *Oakland Harbor Navigation Improvement (50-Foot) Project Final EIR/EIS* (U.S. Army Corps of Engineers and Port of Oakland 1998), and the *Long-Term Management Strategy Draft EIS/EIR* (U.S. Army Corps of Engineers et al. 1996). These projects and plans are described in publicly available documents.

Approval and implementation of the ROD/RAP is intended to facilitate implementation of the HWRP. The HWRP as described in the 1998 EIR/EIS, would be cumulatively beneficial to the environment in terms of many resource areas and would preclude development of the site for other more intensive and environmentally impacting land uses. Conceptually, the impacts associated with cleanup activities are captured in the cumulative scenario evaluated in the 1998 HWRP EIR/EIS. Nevertheless, details of the cleanup activities contained in the ROD/RAP, such as site locations, timing of clean up, and extent of cleanup activities, may result in different or new cumulative impact considerations. Because the clean up is a component of the HWRP implementation, cumulative impacts of the ROD/RAP are evaluated in the context of the overall HWRP cumulative analysis.

Geology, Soils, and Seismicity

The implementation of the proposed ROD/RAP is not expected to exacerbate or contribute to seismic hazards and would not result in a cumulative impact. Activities related to the ROD/RAP, as discussed in Section 3.1, are not expected to result in an increase in erosive conditions on the site that would contribute to a cumulative erosion impact. The ROD/RAP does not include the placement of any permanent structures on the site, and thus a significant geological impact is not expected.

Water Resources

Completion of cleanup activities proposed in the ROD/RAP would result in a long-term improvement in water quality by reducing potential for introduction of contaminants into area waters. Implementation of the ROD/RAP, in combination with other remediation and restoration activities at HAAF, the SLC parcel, BMKV, and other sites, would be expected to cumulatively result in reduced levels of contaminants that could degrade water quality, as well as improved functioning of wetlands to filter contaminants from runoff and enhance water quality.

Ground-disturbing activities under the ROD/RAP along with other projects envisioned in the area would result in potential short-term water quality impacts to San Pablo Bay and other water courses in the area as a result of increased sedimentation. The contribution from ROD/RAP cleanup activities is expected to be minor since most actions would occur within the airfield parcel, which is largely bounded by levees that limit runoff into San Pablo Bay or outfalls that lead to San Pablo Bay. Cleanup activities would also be subject to best management practices (BMPs) to further reduce potential sedimentation. Cleanup activities are therefore not expected to contribute to cumulative water quality impacts.

ROD/RAP activities are not expected to result in a physical adverse effect on flooding, and thus would not contribute to a cumulative significant physical effect on flooding.

Public Health

Implementation of the proposed ROD/RAP would result in a minor and temporary increase in the potential for mosquito production and would not contribute to a significant cumulative impact. Mosquito abatement practices would be implemented as deemed necessary as part of the larger HWRP.

Biological Resources

Cleanup activities in the coastal salt marsh area would result in the temporary and permanent loss of coastal salt marsh (approximately 5.5 and 0.4 acres, respectively) that provides habitat for a number of sensitive species. This project and others, including the HWRP, BMKV restoration, and other remedial actions and restoration projects in the area, would cumulatively contribute to a short-term loss in coastal salt marsh. Nevertheless, these projects would substantially increase the acreage of tidal marsh habitat available for sensitive wildlife species in the long term and would result in a net increase in habitat value, particularly for tidal-marsh-dependent species in this portion of San Pablo Bay. Therefore, the proposed ROD/RAP is expected to contribute considerably to a cumulative beneficial impact for biological resources.

Land Use and Public Utilities

Implementation of the ROD/RAP activities would have short-term effects on the surrounding area through effects on air, noise, and transportation. However, these activities would not result in permanent incompatibilities with surrounding land uses. Implementation of the HWRP, which would be facilitated by the ROD/RAP cleanup activities, would result in land use patterns that would be consistent with the current and planned land uses in the area and would not contribute to cumulative effects.

Hazardous Substances and Waste

In addition to the proposed remedial process proposed in the ROD/RAP, remedial issues have also been addressed on other parts of the former HAAF installation and are currently being addressed at the SLC parcel. The Navy ball fields are being addressed under the Navy BRAC process. The SLC parcel is being addressed under the FUDS process. Future cleanup activities may also occur on the adjacent BMKV parcel as part of the HWRP. It is assumed that the remedial selection process for these sites will result in implementation of remedial approaches that will clean up any contamination at these adjacent areas to a condition suitable for the proposed wetlands reuse.

The proposed ROD/RAP, in combination with other remedial actions completed or underway in the project area, would have a less-than-significant cumulative impact related to hazardous materials conditions.

Transportation

Construction traffic would represent a short-term, minor increase in traffic that could contribute to congestion on roadways in the City of Novato and adjacent areas and on state roads. A construction traffic plan would be implemented as part of the final design for site remediation. The construction plan would ensure that construction traffic is routed through appropriate non-congested intersections and is concentrated during off-peak hours.

Air Quality

Activity associated with implementation of the ROD/RAP is expected to result in annual emissions that are below BAAQMD *de minimis* threshold levels for ozone precursors and, with implementation of mitigation measures, for PM10. The BAAQMD thresholds are designed to evaluate individual projects in light of the cumulative environment of Bay Area air quality, and thus a project that does not result in emissions above the thresholds does not result in a considerable contribution to a cumulative impact on air quality.

Construction activity therefore would not cause or contribute to any new violation of ambient air quality standards, increase the severity or frequency of any existing standard violation, or delay timely attainment of any standard. Wetland restoration projects proposed on HAAF, BMKV, and the SLC parcel, are unlikely to occur simultaneously. Nevertheless, based on air emissions estimates prepared for other wetland restoration projects, concurrent performance of these projects would not be expected to exceed BAAQMD *de minimus* levels.

Noise

Implementation of actions in the proposed ROD/RAP is not expected to contribute to significant long-term cumulative noise impacts. Remedial activities under the ROD/RAP, in combination with other noise-generating sources, would exacerbate noise conditions at sensitive receptor locations. However, these noise levels could be reduced through appropriate construction practices to a less-than-significant level. Most noise-generating activities in the area would be related to traffic, although some noise may be generated by continuing construction on the New Hamilton Partnership properties. Other large-scale construction activities proposed in the area that could contribute to cumulative noise conditions, such as wetland restoration on the BMKV and SLC parcels, are unlikely to occur concurrent with implementation of the ROD/RAP. With mitigation, the activities proposed in the ROD/RAP would not be expected to contribute considerably to a cumulative noise impact.

Cultural Resources

Implementation of the ROD/RAP is not expected to contribute to a cumulative loss of cultural resources in the region. The HAAF main airfield parcel and adjacent coastal salt marsh are not known or likely to contain cultural resources that would be lost or contribute to a cumulative loss. Remedial measures would not have an impact on the character of the adjacent HAAF historic district.

Growth Inducement

A project is considered growth inducing if it directly or indirectly fosters economic or population growth or the construction of additional housing, removes obstacles to population growth, or encourages other activities that cause significant environmental effects (State CEQA Guidelines Sec. 151262[d]).

Approval and implementation of the proposed ROD/RAP would have no direct effect on growth inducement. Implementation of the ROD/RAP would enable the ultimate use of the site for wetland restoration, which would indirectly limit growth by precluding development of the site for developed uses that could be growth inducing.

Significant Irreversible Changes in the Environment

Section 15126[f] of the State CEQA guidelines requires EIRs to include a discussion of significant, irreversible environmental changes that would result from project implementation.

Approval of the ROD/RAP and implementation of the remedial measures proposed therein would result in the irretrievable commitment of petroleum products to fuel vehicles and equipment. Although implementation of the ROD/RAP would condition future use of the site through institutional controls, these restrictions would not represent an irreversible change to the environment.

Chapter 6

List of Preparers and Distribution List

List of Preparers

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Jerry Stogsdill	Publications Specialist

Distribution List for Draft SEIR

The Draft SEIR is being circulated for public review together with the Draft ROD/RAP. This Draft SEIR is being distributed to federal, state, and local agencies with jurisdictional authority, permit authority, or interest in the project, as well as to individuals and organizations who submitted comments during scoping for the Draft SEIR. Notices of availability of this document are being distributed to organizations and individuals located within close proximity to the project or that have been identified as potentially concerned or interested parties within the project area. Organizations receiving notice are listed below but individuals are not. The Draft SEIR is also available at local libraries (listed below) and on the internet at the Conservancy's website (www.ca.conservancy.gov).

Libraries where Draft SEIR is Available

Marin Civic Center Library, 3501 Civic Center Drive #427, San Rafael, CA

Marin County Free Library South Novato, 476 Ignacio Blvd, Novato, CA

Novato Public Library, 1720 Novato Blvd, Novato, CA

Petaluma Regional Library, 100 Fairgrounds Dr., Petaluma, CA

Sonoma County Central Library, 3rd and E Street, Santa Rosa, CA

Agencies and Organizations Receiving Draft SEIR

Federal Agencies

U.S Department of Commerce, National Marine Fisheries Service

U.S. Army BRAC

U.S. Army Corps of Engineers, Sacramento District

U.S. Army Corps of Engineers, San Francisco District

U.S. Fish and Wildlife Service

U.S. Navy BRAC

State Agencies

California Coastal Conservancy

California Department of Fish & Game

California Department of Toxics Substance Control

California Office of Historic Preservation

California Native American Heritage Commission

Caltrans District IV

Department of General Services

San Francisco Bay Area Air Quality Management District

San Francisco Bay Conservation & Development Commission

San Francisco Regional Water Quality Control Board

Local Agencies

City of Novato Community Development

Marin County Board of Supervisors

Marin County Planning Department

Novato Sanitary District

Agencies and Organizations Receiving Notice of Availability

Federal Agencies

General Service Administration

U.S Department of Commerce, National Oceanic and Atmospheric Administration

U.S. Army Corps of Engineers

U.S. Army Corps of Engineers, Headquarters

U.S. Army Corps of Engineers, Mobile District

U.S. Coast Guard

U.S. Environmental Protection Agency, Region IX

State Agencies

California Department of Health Services

California Department of Toxics Substance Control

California Department of Water Quality

California Department of Water Resources

California Highway Patrol

California Public Utilities Commission

California State Lands Commission

California Water Resources Control Board

Caltrans Planning

San Francisco Bay Joint Venture

San Francisco Estuary Project

Local Agencies

Bel Marin Keys Community Services District

Bel Marin Keys Planning Advisory Board

City of Cotati

City of Novato

City of Novato Planning Commission

Golden Gate Bridge Highway

Hamilton Elementary School

Las Gallinas Valley Sanitary District

Local Agency Formation Commission

Marin County Auditors

Marin County Board of Supervisors

Marin County Clerk

Marin County Community Development Agency

Marin County Council

Marin County Flood Control and Water Conservation District

Marin County Open Space District

Marin County Resource Conservation District

Marin County Transit District

Marin Municipal Water District

Marin-Sonoma Mosquito and Vector Control District

North Marin Water District

Novato Fire District

Petaluma Planning Department

Rohnert Park Planning Department

San Jose School District

San Rafael Planning Department

Sonoma City Planning and Building Department

Sonoma County Administrative Office

Sonoma County Board of Supervisors

Sonoma County Permit and Resource Management Department

Sonoma County Public Works Department

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Organizations

AAUW

Air Force Sergeant's Association

American Legion

AMG Land Company

Argus Courier

Bahia Homeowner's Association

Bay Area Council

Bay Dredging Action Coalition

Bay Planning Coalition

Benevolent and Protective Order of the Elks

Bianchi, Paxton, Engel & Keegin

Black Point Environmental Association

Black Point Improvement Club

Bolinas Hearsay News

BPOE

Brobeck, Phleger & Harrison

California Communities Against Toxics

California Environmental Rights Alliance

California for Environment and Economic Balance

California Native Plant Society

California Native Plant Society - Marin Chapter

California Library Association

CalPIRG

Catholic Youth Organization

Chambers Cable

Church of the Nazarene

Citizens Committee to Complete the Refuge

Coastal Post

Communities for a Better Environment

CSW/Stuber Stroeh (Martin Development)

Del Monte HOA

Del Prado Realty Investors, Ltd.

Domingo Canyon HOA

Dominican College

East Novato Neighborhood Association

Econews

Ecumenical Association of Housing

EIP Associates

Environmental Forum of Marin

Estuary Newsletter

Eugene Burger Management Group

Federated Coast Miwok

Friends of Novato Creek

Ghilotti Brothers, Inc.

Girl Scouts of America

Global Gardens Inc.

Greenaction

Greenpeace

Hamilton Field Action Association

Hamilton Field Community Development Foundation

Hamilton MAB

Hamilton Real Estate Company

Hamilton Reuse Committee

Hazardous Waste Permit Monitoring Group

Henry Ohlhoff House

Hill Neighborhood Association

Hillside Park HOA

Hispanic Chamber of Commerce

Horizon Cable Television

Ignacio Rotary

Images of Style

Indian Valley Association

IT Corporation

KCBS - AM 740

KFTY-TV 50

Kiwanis Club of Novato

Knights of Columbus

KOFY-TV 20

KQED-FM 88.5

KTVU-TV 2

Laurel Creek HOA

League of Women Voters

League of Women Voters of Marin County

Los Robles Mobile Home Park Association

Luria Glen Isaacson and Association

Lynwood Park Improvement Association

Margaret Todd Senior Center

Marin Audubon Society

Marin Community College

Marin Conservation Corps

Marin Conservation League

Marin Council of Agencies

Marin County Air Response Instant Network

Marin County Athletic Coalition

Marin County Aviation Commission

Marin County Conservation League

Marin County Country Club HOA

Marin County Foundation

Marin County Horse Council

Marin County Land Company

Marin County Sierra Club

Marin Humane Society

Marin Independent Journal

Marin Valley Homeowner's League

Marinscope

McClay Road HOA

McDonough, Holland & Allen

Millard Dubose Trust

Mission Estates HOA

National Trust for Historic Preservation

North Bay Transit Committee

North Marin County Homeowner's Association

North Marin County Recreation Center, Inc.

Northern California Rugby Union

Novato Advance

Novato Chamber of Commerce

Novato Child Care Family Task Force

Novato Ecumenical Housing, Inc.

Novato Heights HOA

Novato Historical Guild

Novato History Museum

Novato Host Lions Club

Novato Human Needs Center

Novato Marie Callendar Investment

Novato Senior Citizens, Inc.

Novato Task Force on Homelessness

Pacific Sun

Parkhaven HOA

Partridge Knolls HOA

Petaluma Post

Poplar Terrace Neighborhood Association

Prospect Place HOA

Pt. Reyes Light

Reorganized Church of Jesus

River Vista HOA

Rotary Club of Novato

Ryan Brandenburg Living History Center

San Andreas Place HOA

San Francisco Chronicle

San Marin 10 HOA

San Marin Improvement Association

San Marin Valley HOA

San Rafael News Pointer

Santa Rosa Press Democrat

Save San Francisco Bay Assoc.

Scottsdale Lake Homeowner's Association

Sierra Club of California

Sierra Club, Marin Group

Sierra Club, San Francisco Bay Chapter

Soroptimist International of Novato

South Novato HOA

TDC Environmental

The Access Group, Ltd.

The ARK

The Sacca Corporation

Tiburon Center for Environmental Studies

Toxics Assessment Group

Viacom (Ch. 31) Community Billboard

Village Marin Hillside

Waste Management Inc.

Western Media

Western Oaks Village Association

Wild Horse Valley Association

Individuals Receiving Notice of Availability

Notices of availability of this document were sent to individuals within close proximity to the project, or that have been identified as being interested or potentially interested in the proposed project. The Notice of availability was sent to over 1,100 individuals.

Chapter 7
References

Aquatic Habitat Institute. 1990. San Francisco Estuary Project: Status and Trends Report on Dredging and Waterway Modification in the San Francisco Estuary. San Francisco Estuary Project. Oakland, CA.

Archaeological Consulting and Research Services, Inc. 1979a. Report of the preliminary archaeological reconnaissance of AFRES parcels 1 and 3, Hamilton Air Force Base. California. (RPT. #S-1549 on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.) Mill Valley, CA. Prepared for General Services Administration Contract No. FO4602-76-M-0558.

______________. 1979b. Report of the preliminary archeological reconnaissance of AFRES parcels 1 and 3. Hamilton Air Force Base, California. Manuscript on file at the Northwest Information Center of the California Archeological Inventory, Sonoma State University, Rohnert Park, CA. Unpublished report.

Archaeological Resource Service. 1991. A cultural resources evaluation of approximately 10 miles of pipe-line replacement in the Terra Linda, Marinwood, and Hamilton Field Districts of Marin County, California. Petaluma, CA. Prepared for Marin Municipal Water District, Corte Madera, CA.

Association of Bay Area Governments 1989. Bay Trail Plan. San Francisco, CA.

Baker, S. and S. Salzman. 1980. Archaeological investigations at site C, Hamilton Air Force Base, Marin County, California. (RPT. #S-2136 on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.) Archaeological Consultants. San Francisco, CA. Prepared for Heritage Conservation and Recreation Service, San Francisco, CA.

Bay Area Air Quality Management District. 2003. Bay Area Air Pollution Summary. BAAQMD Website www. www.baaqmd.gov/pie/apsum/ Accessed on May 13, 2003.

______________. 2002. BAAQMD Website http://www.baaqmd.gov/planning/2001sip/2001sip.htm. Accessed on May 13, 2003. San Francisco, CA.

_____________. 2000. Bay Area Clean Air Plan. San Francisco, CA.

_____________. 1999. BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of projects and Plans. April 1996, Revised December 1999. San Francisco, CA.

_____________. 1996. BAAQMD CEQA guidelines - assessing the air quality impacts of projects and plans. San Francisco, CA.

Biological Assessment for Hamilton Army Airfield BRAC Property, North Antenna Field, and Hamilton Wetland Restoration Project. 2002. Department of Army Forces Command. April 2002.

California Air Resources Board. 1993. California air quality data. Summary of air quality data, Volumes XXI, XXII, XIII, and XXIV. Sacramento, CA.

_____________. 1984. California Surface Wind Climatology. Aerometric Data Division. Sacramento, CA.

California Department of Fish and Game. 2003. California Natural Diversity Database. May.

California Regional Water Quality Control Board, San Francisco Bay Region. 1997. Water quality control plan - San Francisco Bay Region (2). Oakland, CA.

California State Coastal Conservancy and City of Novato. 2001. *Hamilton Public Access Bay Trail Plan*. Prepared by Questa Engineering Corporation. October.

California State Coastal Conservancy and U.S. Army Corps of Engineers, San Francisco District. 1998. Hamilton Army Airfield Wetland Restoration, Volume II: Final Environmental Impact Report/Environmental Impact Statement. Prepared by Jones & Stokes. December.

California State Water Resources Control Board. 2003. Section 303(d) List Proposals.

California State Water Resources Control Board. 1990. Enclosed Bays and Estuaries Plan. Sacramento, CA.

Chavez, D. 1986. Cultural resources evaluation for the Hamilton Field EIR, City of Novato, Marin County, California. (RPT. #S-8180 on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.) David Chavez & Associates. Mill Valley, CA. Prepared for EIP Associates, San Francisco, CA.

CH2M HILL. 2003a. Final Coastal Salt Marsh Focused Feasibility Study, Hamilton Army Airfield, Novato, California. May.

_____________. 2001. Final Report: Inboard Area Focused Feasibility Study Report: BRAC Property Hamilton Army Airfield. Prepared for the U.S. Army Corps of Engineers, Sacramento District. Oakland, CA.

City of Novato. 2000. City of Novato General Plan. Novato, CA.

_____________. 1996. Novato General Plan. March. Novato, CA.

Contra Costa Transportation Authority. 1997. Technical procedures.

Desgrandchamp, C., and M. Clark. 1978. Pipeline and water treatment plant facilities, Marin County. Manuscript on file at the Northwest Information Center of the California Archeological Inventory, Sonoma State University, Rohnert Park, CA. Unpublished report.

Earth Technology Corporation (ETC). 1994a. *Community Environmental Response Facilitation Act Report, Hamilton Army Airfield.* Alexandria, Virginia.

Environmental Science Associates, Inc. 1993. Bel Marin Keys Unit V Final Environmental Impact Report/Environmental Impact Statement. Volume I – revised draft. August. (Corps Public Notice No. 15813N33A; State Clearinghouse No. 89072519.) San Francisco, CA.

Federal Transit Administration. 1995. Transit noise and vibration impact assessment. Washington, D.C.

Flynn, K. 1978. Archaeological impact evaluation of two noncontingency parcels of land near Ignacio, Marin County: (A) Bell Marin Keys Unit IV and (B) Ignacio Industrial Park Unit III (ARS 78-27.) Letter report #S-891 on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

Foster Wheeler. 2000. Remedial Design Investigation Final Data Report, Hamilton Army Airfield, BRAC Property, Hamilton AAF, Novato, California, Volumes 1 and 2, prepared for the Sacramento District Corps of Engineers, Sacramento, CA.

Hart, E. W., and W. A. Bryant. 1997. Fault-Rupture Hazard Zones in California: Alquist-Priolo Earthquake Fault Zoning Act with index to earthquake fault zone maps. California Division of Mines and Geology. Special Publication 42. Sacramento, CA.

IT Corporation. 2001 Baseline Human Health and Ecological Risk Assessment for the Base Realignment and Closure Act (BRAC) Property at Hamilton Army Airfield (HAAF), Novato, California. Prepared for the U.S. Army through the U.S. Army Corps of Engineers, Sacramento District.

______________. 2000. Phase II Site Investigation Report, North Antenna Field, General Services Administration, Hamilton Army Airfield, Novato, California. Submitted to U.S. Army Corps of Engineers, Sacramento District.

______________. 1999a. Comprehensive Remedial Investigation Report, BRAC Property, Hamilton Army Airfield, Novato, California. Prepared for the U.S. Army through the U.S. Army Corps of Engineers, Sacramento District.

______________. 1999b. 1998 Interim Removal Action Data Report, BRAC Property, Hamilton Army Airfield, Revision B, Martinez, California. Prepared for the U.S. Army through the U.S. Army Corps of Engineers, Sacramento District.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final report. California Department of Fish and Game, Inland Fisheries Division. Rancho Cordova, CA.

Jones & Stokes. 2003. Final Supplemental Environmental Impact Report/Statement for Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project. Prepared by Jones & Stokes for the California State Coastal Conservancy and the U.S. Army Corps of Engineers, April.

Jones & Stokes Associates, Inc. 1991. Wetland delineation office report for Hamilton Army Airfield, Novato, California. (JSA 89-173.) Sacramento, CA. Prepared for U.S. Army Corps of Engineers, Air Force Project Management Office, Sacramento, CA.

Kinnetic Laboratories, Incorporated. 2002. Joint Stormwater Agency Project to Study Urban Sources of Mercury, PCBs, and Organochlorine Pesticides. Final Report. A collaborative project of Santa Clara Valley Urban Runoff Pollution Prevention program, Contra Costa Clean Water Program, San Mateo Countywide Stormwater Pollution Prevention Program, Marin County Stormwater Pollution Prevention Program, Vallejo Flood Control and Sanitation District, and Fairfield-Suisun Sewer District. Santa Cruz, CA.

LSA Associates, Inc. (LSA). 1998. California Clapper Rail Surveys: Hamilton Army Airfield and Antenna Field. Point Richmond, California.

______________. 1997. Delineation of Clean Water Act Jurisdiction on Proposed Bel Marin Keys Project Site, Novato, CA. Novato, CA.

______________. 1997a. Hamilton AAF Bat Survey, Novato, Marin County.

______________. 1997b. Red-Legged Frog Survey: Hamilton Army Airfield. Point Richmond, California.

______________. 1997c. Proposed Burrowing Owl Relocation Program: Hamilton AAF, Novato, Marin County—Revised. Letter report to California

Department of Fish and Game, Attn: Carl Wilcox and Fred Botti, from Steve Granholm, LSA. March 4.

Marin County Community Development Agency, Planning Division. 1994. The Marin Countywide Plan. San Rafael, CA.

May & Associates, Inc. 2001. Special-Status Surveys of Terrestrial Habitat Characterization of Four Mitigation Complexes, San Francisco Airport Expansion Project. December. Walnut Grove, CA. Prepared for Jones & Stokes, Sacramento, CA.

Medical Physics Center. 1994. Base Realignment and Closure (BRAC) Historical Record Search to Identify any Residual Radioactive Material at Hamilton Army Airfield.

Miller Pacific Engineering Group. 1995. Geotechnical Investigation Bel Marin Keys Unit 5 Marin County, California. December 21, 1995. San Rafael, CA. Prepared for California Quartet.

Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish Species of Special Concern in California. University of California, Davis. Davis, CA. Prepared for California Department of Fish and Game, Rancho Cordova, CA.

National Oceanic and Atmospheric Administration. 1999. Report of the San Francisco Airport Science Panel.

Novato Department of Community Development. 2000. City of Novato General Plan. Novato, CA.

PAR Environmental Services, Inc. 1998. National Register of Historic Places registration form, Hamilton Army Air Field discontiguous historic district, Novato, California. Sacramento, CA. Submitted to Engineering Field Activity, West, Naval Facilities Engineering Command, San Bruno, CA.

______________. 1994. National Register of Historic Places registration form, Hamilton Army Air Field historic district, Novato, California. June. Sacramento, CA.

______________. 1993a. National Register of Historic Places evaluation of eight buildings on Hamilton Army Airfield, Marin County, California. Sacramento, CA.

______________. 1993b. Hamilton Army Airfield historic district historic resource inventory forms. Sacramento, CA.

______________. 1993c. National Register of Historic Places evaluation, Hamilton Army Air Field historic district, Marin County, California. Draft report. Sacramento, CA.

______________. 1993d. Draft NRHP nomination for the Hamilton Army Airfield Historic District.

______________. 1989. Cultural resources assessment of Army properties on Hamilton Air Force Base, Marin County, California. Prepared for Jones & Stokes Associates, Inc., Sacramento, CA. Unpublished report.

Remsen, J. V. 1978. Bird species of special concern in California: an annotated list of declining or vulnerable bird species. (Wildlife Management Branch Administrative Report No. 78-1.) California Department of Fish and Game, Nongame Wildlife Investigations. Sacramento, CA.

Robert Bein, William Frost & Associates. 1995. Hamilton Army Airfield Reuse Plan–Existing Conditions Analysis. May 25. Irvine, CA. Prepared for Hamilton Reuse Planning Authority.

San Francisco Bay Conservation and Development Commission. 2001. Public Access and Wildlife Compatibility. March. San Francisco, CA.

San Francisco Regional Water Quality Control Board. 2001. Cleanup and Abatement Order No. 01-139, U.S. Army Corps of Engineers, Sacramento District, Hamilton Air Force Base, Landfill 26.

San Francisco Regional Water Quality Control Board. 2001a. Executive Officer's Report, May 15.

______________. 2001b. Executive Officer's Report, September 12.

______________. 2000. Draft Staff Report, Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines, May, 2000

______________. 1999. Regional Toxic Hot-Spot Cleanup Plan.

______________. 1995. San Francisco Bay Region–Water Quality Control Plan.

Sequoia Analytical. 2001. Results of analyses for Pacheco Pond water samples collected on April 19 and April 20, 2001 sent to Susan Gladstone of San Francisco Regional Water Quality Control Board. Petaluma, CA.

Skinner, M. W., and B. M. Pavlik. 1994. Inventory of rare and endangered vascular plants in California. 5th edition. (Special Publication No. 1.) California Native Plant Society. Sacramento, CA.

Transportation Research Board. 2000. Highway Capacity Manual.

U.S. Army BRAC Office. 2003. Memorandum of Record. Additional Historic Research for Sites Identified in the Archives Search Report 2001.

U.S. Army Corps of Engineers (USACE). Undated. A Brief History of Hamilton Army Airfield. Pamphlet.

______________. 2001. Final Human Health and Ecological Risk Assessment. BRAC Property, Hamilton Army Air Field. Prepared for the U.S. Army by USACE, Sacramento District, with technical assistance from IT Corp. and CH2M HILL. August 2001.

______________. 1996. Environmental Impact Statement–Hamilton Army Airfield Disposal and Reuse. Volume I. Final. February. Sacramento District. Sacramento, CA. Technical assistance from Jones & Stokes Associates, Inc. (JSA 92-204.), Sacramento, CA.

U.S. Army Corps of Engineers and Port of Oakland. 1998. Oakland Harbor navigation improvement (-50 foot) project draft environmental impact statement/environmental impact report. Executive Summary. February. (State Clearinghouse No. 97072051.) San Francisco and Oakland, CA.

U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, and State Water Resources Control Board. 1996. Long-term management strategy for the placement of dredged material in the San Francisco Bay region, final policy, environmental impact statement/programmatic environmental impact report. Volume I. October. San Francisco, CA.

Williams, D. F. 1986. Mammalian Species of Special Concern in California. (Wildlife Management Division Administrative Report 86-1.) California Department of Fish and Game, Wildlife Management Division. Sacramento, CA.

Woodward-Clyde. 1998. Draft Hamilton Wetlands Conceptual Restoration Plan. April. Prepared with H.T. Harvey and Associates and Philip Williams and Associates, Ltd. Prepared for the California State Coastal Conservancy and the City of Novato, Novato, CA.

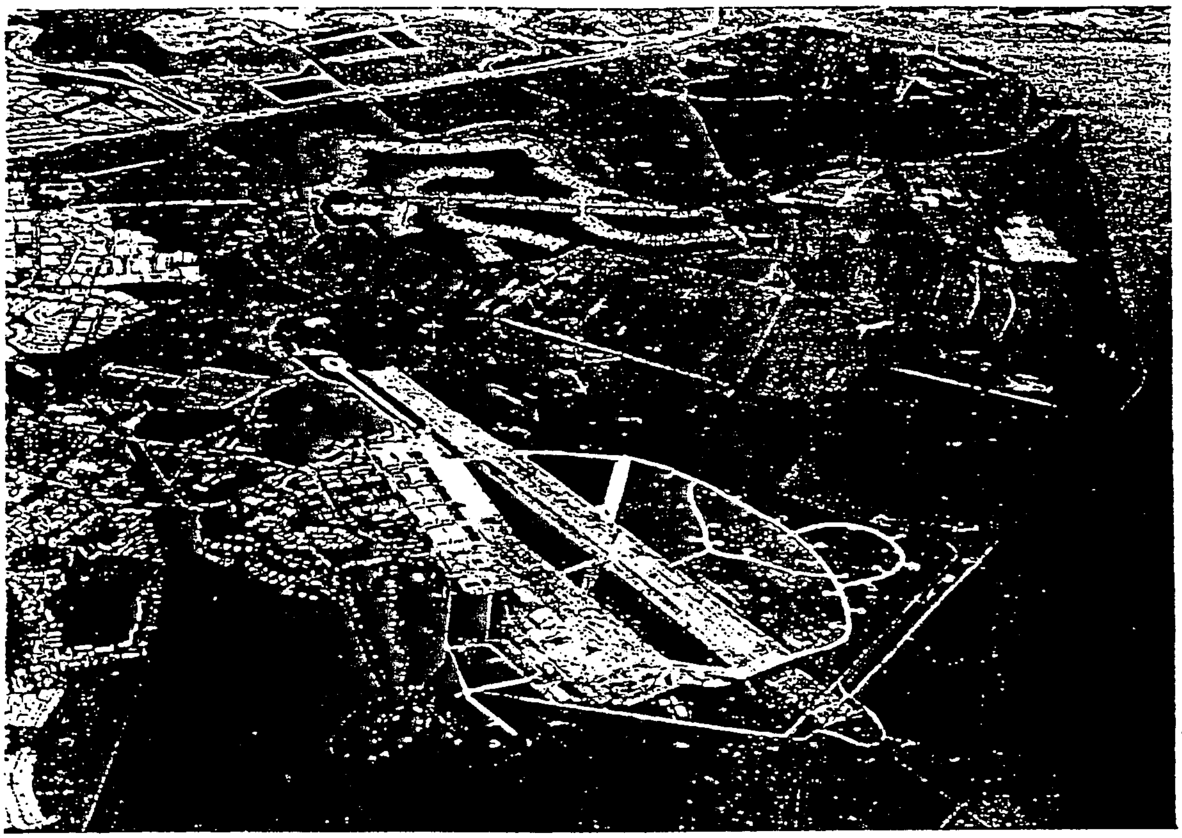
______________. 1985. Hamilton Air Force Base GSA Sale Area Confirmation Study for Surface and Subsurface Hazardous Materials Contamination, Final Report. Omaha, NE.

Appendix A

Hamilton Wetland Restoration Project Description

DRAFT
EXECUTIVE SUMMARY

HAMILTON WETLANDS CONCEPTUAL RESTORATION PLAN



Prepared for
The State Coastal Conservancy
The City of Novato

April 24, 1998

Prepared by
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The California State Coastal Conservancy (Conservancy), with staff support from the San Francisco Bay Conservation and Development Commission (BCDC), is investigating the feasibility of restoration of the former Hamilton Army Airfield and the adjacent State Lands Commission (SLC) Antennae Field to tidal and non-tidal wetlands. This Feasibility Analysis and Conceptual Restoration Plan (Hamilton Conceptual Plan) presents a plan to carry out this proposed wetland restoration project.

The Hamilton Conceptual Plan discusses the project goals and objectives established by the Hamilton Restoration Group (HRG) (Section ES-1), describes the project area (Section ES-2), discusses the development of project alternatives (Section ES-3), presents an ecological and engineering overview of the Preferred Alternative, including a cost estimate (Section ES-4), highlights the differences between the Preferred Alternative and the Natural Sedimentation alternative (Section ES-5), describes the timeline for restoration (Section ES-6), and identifies issues for further consideration during final design (Section ES-7).

The project site is located on the northwestern edge of San Pablo Bay in the San Francisco Estuary (see Figure ES-1). The Hamilton site, totaling over 900 acres, consists of the 619-acre former Hamilton Army Airfield plus the contiguous 20-acre Navy ballfields to the south (together termed the "HAAF parcel"), and the contiguous 250-acre State Lands Commission Antennae Field (termed the "SLC parcel") to the north of HAAF. The HAAF site (excluding the Navy ballfields) is currently owned by the U.S. Army and is proposed to be transferred to the Conservancy following base closure. The Navy ballfields are currently owned by the U.S. Navy and are also proposed to be transferred to the Conservancy. The SLC parcel is currently owned by the State Lands Commission of California.

Wetlands restoration on the portion on the airfield parcel (Figure ES-2) and the adjoining abandoned antennae field that together constitute the project area is consistent with and helps implement applicable local, regional, and state plans, including the Hamilton Reuse Plan, the City of Novato General Plan, and the San Francisco Bay Conservation and Development Commission San Francisco Bay Plan. Restoration is also consistent with several regional initiatives and plans including:

- the San Francisco Estuary Project's Comprehensive Conservation and Management Plan,
- the Regional Habitat Goals Process,
- the Long Term Management Strategy (LTMS) for Dredged Material Disposal
- the CALFED program.

Use of the airfield for aviation would not be consistent with local and regional planning and would be incompatible with the extensive residential development under construction immediately adjacent to the old runway. Therefore, aviation use is not considered in this Conceptual Plan.

In addition, the project will:

- Place the restored wetlands under the long-term management of the U.S. Fish and Wildlife Service or the California Department of Fish and Game.
- Complete the closure, transfer and reuse of the Hamilton Army airfield

- Provide for beneficial use in site construction of over 10 million cubic yards of dredged material from Bay maintenance dredging and new deepening projects that otherwise would likely be disposed as a waste in the Bay or ocean
- Use freshwater runoff from surrounding properties to enhance habitat diversity
- Improve local flood protection
- Provide for public access

ES-1.1 PROJECT GOALS AND OBJECTIVES

The Hamilton Restoration Group (HRG), an advisory group including the City of Novato; local, state and federal resource and regulatory agencies; the U.S. Army; adjacent landowners; concerned individuals; non-profit groups, and the business and dredging community was central to the development of the conceptual plan. The design team, consisting of staff of the Coastal Conservancy, BCDC, and the consultants, worked with the HRG to develop the project goal and objectives as described in the following sections.

ES-1.1.1 Goal

The goal of the Hamilton Wetland Restoration Project is to create a diverse array of wetland and wildlife habitats at the Hamilton site that benefits a number of endangered species as well as other migratory and resident species.

ES-1.1.2 Ecological Objectives

- Creation of a mix of tidal habitats on 80 percent of the land area available for restoration. This mix will consist of subtidal open water, intertidal mudflats, low, middle and high intertidal marsh, channels, interior tidal ponds, and tidal pannes, with the relative amount of each type changing over time as the site evolves following restoration.
- Creation of a mix of nontidal habitats on 20 percent of the land area available for restoration. If this is not feasible, at least the minimum acreage necessary to replace existing seasonal wetlands on the site at a 1:1 ratio (about 8 percent) will be created. This mix will consist of shallow seasonal ponds and wetlands, and a limited amount of grassland and upland.

ES-1.1.3 General Objectives

- To design and engineer a restoration project that stresses simplicity and has little need for active management
- To demonstrate beneficial reuse of dredged material, if feasible
- To recognize existing site opportunities and constraints, including the runway and remediation of contaminated areas, as integral components of design
- To ensure no net loss of wetland habitat functions presently provided at the Hamilton site

- To create and maintain wetland habitats that sustain viable wildlife populations, particularly for Bay Area special status species
- To include buffer areas along the upland perimeter of the project area, particularly adjacent to residential areas, so that wildlife will not be impacted by adjacent land uses. Perimeter buffer areas should also function for upland refuge, foraging, and corridors for some species
- To be compatible with adjacent land uses and wildlife habitats
- To provide for public access that is compatible with protection of natural resource values and local public access policies.

ES-2.1 SITE DESCRIPTION

Several existing features of the Hamilton site have influenced development of the restoration alternatives and are discussed in this section: drainage conditions and freshwater inflows from adjacent properties, site subsidence, Novato Sanitary District facilities, the runway, existing biological resources, and the potential to expand the project onto the adjacent Bel Marin Keys Unit V property.

ES-2.1.1 Subsidence

The Hamilton site has subsided on average approximately 8 ft. since it was diked off from San Pablo Bay. Much of the site is below -5 ft. NGVD (National Geodetic Vertical Datum of 1929, which is the datum used throughout this report unless otherwise noted). This means that flood control levees will be needed to protect adjoining properties from tidal waters after the project is restored. It also means that imported fill material or interior dikes will be needed to construct site features such as seasonal wetlands or uplands.

ES-2.1.2 Drainage Conditions and Freshwater Inflows

Winter storm flows from several adjacent properties drain into HAAF and are conveyed via the perimeter drainage system to the Army pump station where the water is pumped out into San Pablo Bay. These inflows include two storm water outfalls from the New Hamilton Partners (NHP) development south of HAAF, Landfill 26 south of HAAF, Pacheco Pond storm overflows northwest of HAAF, and some surface drainage from Las Gallinas Valley Sanitary District lands south of HAAF, the SLC parcel and the California Quartet/Bel Marin Keys Unit V property north of HAAF. Most of these inflows will be able to drain through the restored wetlands (pumps may be required for some inflows). However, this Plan assumes that the U.S. Army resolves drainage issues for the adjacent Las Gallinas Valley Sanitary District lands to the south and the Bel Marin Keys Unit V property to the north

ES-2.1.3 Novato Sanitary District Facilities

The Novato Sanitary District (NSD) has two existing facilities on the SLC site: (1) an outfall pipe that crosses the site to the north of the boundary between the HAAF and SLC parcels and has a shallow water discharge approximately 900 feet offshore in San Pablo Bay, and (2) a dechlorination plant located about 1,300 feet west of the outboard levee (Figure ES-2). Utilities and an access road to these facilities are also present The Dechlorination plant and associated utilities are proposed to be relocated off the project site.

ES-2.1.4 Runway

The now-abandoned runway slopes gently downward from the northwest to the southeast and extends over the length of the southern side of HAAF. It is below sea level and estimated to be approximately 3-ft. thick concrete, so it will be buried in place.

ES-2.1.5 Existing Biological Resources

There are approximately 19.5 acres of existing seasonal wetlands on the HAAF parcel (including the 12.4 acre Landfill 26 mitigation site). Another 16 acres of seasonal wetlands are located on the SLC parcel. The perimeter drainage ditch contains another 1.2 acres of brackish marsh. Most of the HAAF site is grassland. There are approximately 120 acres of pickleweed (*Salicornia virginica*)-dominated tidal marsh on the bayward side of the outboard levee that separates the site from San Pablo Bay. Several special status species are known to occur at the site. Four species (California clapper rail, California black rail, San Pablo song sparrow, and salt marsh common yellowthroat) utilize the outboard tidal marsh. It is assumed that the salt marsh harvest mouse is also utilizing the outboard tidal marsh. Three other species (northern harrier, short-eared owl, and burrowing owl) use the wetlands and grasslands for foraging and/or nesting.

ES-2.1.6 Potential Project Expansion

The Conservancy is engaged in discussions with the owners of the Bel Marin Keys (BMK) Unit V property (see Figure ES-2) for possible inclusion in this restoration project. The BMK site is approximately 1,610 acres. Addition of this parcel would obviate the need for a flood control levee along the northern perimeter of the HAAF and SLC parcels, though a flood control levee would be required further to the north.

ES-3.1 DEVELOPMENT OF THE PROJECT ALTERNATIVES

The design team together with the HRG initially generated four alternatives and narrowed these down to two alternatives (alternatives 1 and 2) for consideration in the Feasibility Analysis. Alternative 1, the Natural Gradient alternative, is the Preferred Alternative because it is the only alternative that meets all the project objectives. The Preferred Alternative is the subject of the Conceptual Restoration Plan. Alternative 2, the Natural Sedimentation alternative, is a viable approach that can be implemented if adequate volumes of dredged material are not available. Briefly, these alternatives are:

- Alternative 1 (Preferred Alternative): Natural Gradient. This alternative would restore a combination of tidal wetlands and nontidal wetlands and upland habitats that would drop in elevation from the upland perimeter down to San Pablo Bay. This alternative would utilize dredged material to raise site elevations to restore the non-tidal wetlands above the tidal plain and to accelerate formation of tidal wetland in areas that will be subject to tidal action. Section ES-4 describes this alternative in more detail.
- Alternative 2: Natural Sedimentation (Backup Alternative). This alternative consists of breaching the outboard levee and allowing natural sedimentation to restore tidal wetlands on the site. Two variations were considered: (1) tidal action would be restored to the entire site, and (2) a new levee would preclude tidal action from a portion of the site where nontidal wetlands would be restored. The design team and the HRG carried the second variation forward in the Feasibility Analysis. Section ES-5 describes the differences between this alternative and the Natural Gradient alternative.
- Alternative 3: Historic Condition (Incorporated Into Alternatives 1 and 2). This alternative would restore the historic condition at the site, based on maps from the mid-1800s: large numbers of interior tidal ponds intermixed within a vast expanse of intertidal marsh. This alternative would not provide seasonal wetlands and it would be difficult to construct interior tidal ponds. However, both the alternatives carried forward are expected to restore interior tidal pond features through natural processes.
- Alternative 4: Seasonal and Tidal Wetland (Dropped from Further Consideration). This alternative would restore tidal and nontidal wetlands. A levee would separate the nontidal wetlands, which would be created at existing site elevations, from the tidal wetlands, which would be created through placement of dredged material. The design team and the HRG eliminated this alternative based on an analysis that the nontidal wetlands should have priority for construction with dredged material and therefore a separator levee would not be necessary.

ES-4.1 DESCRIPTION OF THE PREFERRED NATURAL GRADIENT ALTERNATIVE

The Natural Gradient alternative is the preferred alternative for restoration at Hamilton because it is the only alternative that meets all the project objectives. This section presents an overview of the conceptual-level design for the Natural Gradient alternative.

ES-4.1.1 Overview of the Natural Gradient Alternative

The Natural Gradient alternative meets the project ecological objectives of 80 percent tidal wetlands and 20 percent nontidal wetlands and uplands. This section describes the ecology, hydrology and geomorphology of the habitats to be restored and it describes how each habitat will change over time due to the natural processes of sediment accretion, subsidence, settlement, and sea level rise. Figure ES-3 shows the layout of this alternative at completion of project construction, and Figures ES-4 and ES-5 show the site after 10 and 50 years, respectively. Table ES-1 summarizes the target habitats for the Natural Gradient alternative. This alternative relies on the site topography to drain water through the site, resulting in a design that minimizes the need for active management and maintenance.

Non-Tidal Habitat

Non-tidal habitat will be located on the northwestern portion of the project site (130 acres) and on the southeastern portion of the site (20 acres) (Figure ES-3). Three habitat types will be constructed with dredged material in these areas: uplands, seasonal ponds and wetlands, and a riparian corridor. However, as the dredged material settles (compacts in place) and subsides (compacts the underlying substrate) and sea level rises over time, the actual acreage of the non-tidal habitat will gradually decrease, with the lower elevations changing to tidal habitats. The seasonal ponds and wetlands will be interspersed across the non-tidal portion of the site as a result of topographic variability.

Uplands

Upland areas will be constructed around the site perimeter and will consist of the flood control levees and a buffer/wildlife corridor area. Upland areas will be vegetated by grasses, shrubs and trees established through natural colonization. Uplands will provide refuge for animals using the tidal wetlands, migratory corridors for animals, foraging habitats for many animals, and roosting and nesting habitats for many bird species such as the Burrowing Owl, Loggerhead Shrike, and Northern Harrier.

Seasonal Ponds and Wetlands

Seasonal ponds and wetlands will be constructed in the panhandle area in the northwestern portion of the HAAF parcel and in the "ballfields" area in the southeastern portion of the HAAF parcel. Formation of seasonal ponds and wetlands would rely on rainfall and flood flows for their water supply.

Water and soil salinities would vary throughout these seasonal wetland and ponded areas, providing for a range of plant community composition and ecological functions. The seasonal wetlands will primarily provide low herbaceous vegetation intermixed with shallow seasonal ponds and emergent wetland vegetation. The seasonal ponds will be open water areas with vegetated or unvegetated perimeters. These seasonal habitat will be intermixed and their extent and duration will vary from year to year depending on the local climate. The site will provide habitat for shorebirds and migratory waterfowl. Invertebrate abundances will be high, supporting a food web including shorebirds and waterfowl, as well as species normally found in upland grasslands.

Drainage Channel Riparian Corridor

A drainage channel will be constructed to provide gravity drainage for seasonal flows from the NHP outfalls, Landfill 26 and Pacheco Pond through the tidal marsh to San Pablo Bay (Figure ES-3). These channels would bisect the seasonal ponds and wetlands. The drainage channel would have emergent vegetation such as bulrush (*Scirpus* spp.), cattails (*Typha* spp.), and rush (*Juncus* spp.). Additionally, some riparian trees could become established along the drainage channel and form patches of riparian habitat. The riparian shrubs and emergent vegetation will provide habitat for song birds, raptor perching and cover for small mammals.

Evolution of the Non-Tidal Habitat

Three types of evolution are expected in the non-tidal habitats: ecological changes as vegetation and wildlife habitat colonize the new substrate, structural changes as the areas settle and subside and are subject to sea level rise, and hydrologic changes resulting from the structural changes. Ecological changes are likely to include continual changes in the plant community composition as the early pioneer species are augmented and in some cases replaced by secondary species and increases in wildlife use as food web complexity builds over time and migratory and resident wildlife species colonize the areas.

Structural changes will include differential settlement and subsidence of the placed dredged material. Hydrologic changes will result from the structural changes and fall into two categories: (1) depressions that pond water will form across the landscape as a result of the differential settlement, which will define the locations, extent and inundation regimes of the seasonal ponds and wetlands; and (2) as elevations drop and sea level rises, the lower elevations will become subject to infrequent tidal action and begin to develop a hydrologic regime associated with tidal pannes and high tidal marsh (see the next section describing the tidal wetland habitat). Figures ES-4 and ES-5 show the expected distribution of these habitat types ten and fifty years after project construction, respectively, illustrating how the total acreage of these habitats diminishes over time. All these evolutionary changes are considered beneficial and reflect the long-term ecological goals for the Hamilton site.

Tidal Habitat

Tidal habitats will be located on much of the HAAF parcel (428 acres) and on the SLC parcel (250 acres) (Figure ES-3). Six tidal habitat types will be created in this alternative. Intertidal mudflats and tidal pannes will be the initial habitat type when the levees are breached. Tidal marsh channels and subtidal open water will form on and within the intertidal mudflat. Lastly, tidal marsh and interior tidal ponds will form by natural processes as the system evolves over time. The estimated acreages of each habitat type at equilibrium (i.e., approximately at the conclusion of the 50-year planning horizon for the project) are shown in Table ES-2.

Tidal Pannes

Tidal pannes are landscape features that pond water at the upland perimeter of tidal wetlands in the San Francisco Estuary. These pannes will be constructed adjacent to the non-tidal habitats at final elevations of about +4.5 ft. The hydrologic regime in the tidal pannes will include: (1) year-round infrequent tidal inundation during the higher monthly tides (spring tides); and (2) seasonal freshwater inputs from direct rainfall and runoff from adjacent areas. Tidal pannes typically dry between spring tides during the summer and fall dry seasons and may remain inundated during some or all of the winter and spring rainy season depending on local precipitation. Consequently, surface water and soil salinities tend to vary from nearly fresh to hypersaline, resulting in environmental stresses that limit vegetation colonization. Because tidal pannes occupy the topographic transition between tidal marshes and non-tidal habitat, both the total acreage and actual location of tidal pannes will change over time due to settlement, subsidence, and sea level rise (compare the tidal panne locations in Figures ES-3, ES-4 and ES-5).

During the very high tides that flood these pannes, ducks and larger waders might forage in these areas. Shorebirds may find some prey in these areas, particularly after inundation by very high tides, although most of the use of this habitat type would be by roosting gulls and shorebirds during normal high tide, when their preferred foraging areas are inundated.

Tidal Marsh

Tidal marsh will be the dominant habitat and eventually extend over most of the Hamilton site over time (Figure ES-5). The tidal marsh plain consists of low, middle, and high vegetated marsh plus channels and interior tidal ponds (described in subsequent sections). The Natural Gradient alternative will involve construction of only the "template" (Figure ES-3) upon which natural processes will then act to create the tidal marsh over time. This template consists of an intertidal mudflat constructed of primarily fine-grained dredged material placed at elevations at least one foot below the elevation at which "low" marsh vegetation begins to colonize, construction of internal peninsulas on the HAAF portion to promote rapid sedimentation, and introduction of tidal action through breaching the existing outboard levee. Dredged material would be placed at elevations ranging from a maximum of +2.0 ft. around the site perimeter down to 0.0 ft. nearest the locations for the levee breaches.

Tidal marsh will form on this "template" in two ways. First, it will progress from the edges inward as vegetation colonizes from the site perimeter in bands of "high" marsh and "middle" marsh (see Table ES-1). This process will start soon after construction since the appropriate elevations will exist around the entire site perimeter. Second, tidal marsh will form in the interior areas as sediment accretion raises site elevations up to where "low" marsh plant species can begin to colonize and spread (see Table ES-1). This form of marsh establishment will begin a few years after return of tidal action, once enough sedimentation has occurred. Over time, a fully vegetated marsh plain will colonize the site with elevations ranging between MHW to about one foot above MHHW. A dense network of channels and numerous interior tidal ponds will be interspersed throughout the site (see Figure ES-5).

The tidal wetlands are expected to provide habitat for a number of bird species, including several threatened or endangered species dependent on salt marsh habitats including the California black rail, California clapper rail, San Pablo song sparrow, and salt marsh common yellowthroat. Large numbers of raptors would also use the site, including the peregrine falcon, merlin, American kestrel, red-tailed hawk, northern harrier, and white-tailed kite.

The salt marsh harvest mouse, a state- and federal-endangered species, is expected to use salt marsh habitat dominated by pickleweed.

Channels

Slough channels in tidal marshes are the conduits through which tidal waters flow, carrying their load of sediment, nutrients, and aquatic organisms into and out of the marsh. Slough channels will form rapidly on the tidal mudflats. Channels will range in size from very large channels on the order of hundreds of feet in width that never empty completely to very small channels on the order of one foot or less in width that only are filled with water during higher tides. Formation of the medium and large slough channels will result in down-cutting into placed dredged material by tidal flows. Much of the eroded material will be redeposited elsewhere on the site, while some of the eroded material will be transported back into San Pablo Bay.

Slough channels can be either intertidal, in which case they drain at low tide, or subtidal, in which case they support open water at all times. Water depths and surface area vary continually throughout the rise and fall of the tides, thereby providing constantly changing environmental conditions. Channels thus support a diversity of ecological functions depending on channel size and tidal stage, ranging from shallow and deep open water areas to intertidal mudflats.

Channels within the restored tidal marsh system will greatly enhance the use of the area by fish entering from San Pablo Bay. A number of important game or commercial species would spend the early stages of their lives in such a tidal marsh, including Pacific herring, English sole, and striped bass. San Pablo Bay has been identified as designated critical habitat for the winter run of the Chinook salmon and fall-run Chinook salmon have been observed using the nearby Sonoma Baylands wetland restoration site.

Intertidal Mudflats

Intertidal mudflats will be the dominant habitat type initially and will gradually disappear as natural sedimentation raises the site to elevations suitable for tidal marsh vegetation colonization. Intertidal mudflat will initially extend over most of the tidal portions of the site (Figure ES-3) and will resemble the large mudflats with very gradual slopes found adjacent to Hamilton in San Pablo Bay. The sequence of evolution from intertidal mudflat to vegetated tidal marsh is described above. Intertidal mudflats will mostly be limited to the slough channels within the mature tidal marsh.

Mudflats typically support a high abundance of benthic organisms (i.e., the organisms that live in the mud and on its surface) that serve as a critical component of the food web of estuarine ecosystems. Numerous shorebirds are expected to feed on these benthic organisms at low tide primarily during migration and winter. A number of gulls are expected to forage in or around the marsh and mudflats as well, and Forster's and Caspian terns and ospreys would hunt for fish in offshore waters and marsh channels.

Subtidal Open Water

Subtidal open water areas support continuous open water throughout all tidal stages and exist where the elevations are below the Extreme Low Water (ELW) elevation. In the Natural Gradient alternative, subtidal open water areas will initially be limited to the levee breach and pilot channel in the outboard marsh (see Section ES-4.2.1 below). Subtidal open water areas will then increase fairly rapidly as tidal flows scour large slough channels into the site from the levee breach (see Table ES-2).

Subtidal open water areas provide foraging habitat for migratory and resident waterfowl, as well as brown pelicans and cormorants. These areas would also likely benefit those fish species listed above for the tidal marsh.

Interior Tidal Ponds

Interior tidal ponds are landscape features of mature, equilibrium tidal marshes in the San Francisco Estuary and were historical features at Hamilton. Interior tidal ponds are located atop "drainage divides," or higher areas on the marsh plain between adjacent slough channels. These drainage divides are directly analogous to ridge lines that divide watersheds in upland settings except that the height of drainage divides in tidal marshes is on the order of inches. Interior tidal ponds will not be constructed but instead are expected to form through natural processes within the middle and high marsh plain.

Interior tidal ponds have three water sources. Most prevalent are tidal inputs, typically from higher spring tides. Direct rainfall and emergent groundwater also contribute to surface ponding, while water is lost by surface drainage, groundwater infiltration, and evaporation.

Interior tidal ponds provide foraging habitat for numerous species of shorebirds and waterfowl.

ES-4.1.2 Constructing the Natural Gradient Alternative

Principal Engineering Aspects

Flood Control Levee

The Natural Gradient alternative requires construction of a flood control levee around most of the site that will tie into the existing NHP levee (Figure ES-3). The flood control levee crest elevation will be constructed to +12 ft., based on the estimated 100-year high tide elevation of +7.0 ft., expected settlement of up to 3.5 ft., and an expected 0.5 ft. of sea level rise. .

Tidal Berms

Earthen berms, 100 ft. in width, will be constructed along the interior of the flood control levees in tidal areas to provide erosion protection and additional habitat. These berms begin along the flood control levee slope at an elevation of +6 ft. and slope down toward the tidal marsh to an elevation of +2 ft. Because they are located at intertidal elevations, the tidal berms will provide an early colonization site for tidal marsh vegetation and thereby speed the process of marsh establishment.

Internal Peninsulas

A system of internal peninsulas is proposed for the HAAF parcel as part of the site template to accomplish three objectives: (1) reduce flood control levee erosion by decreasing internal wave heights, thereby reducing wave runup; (2) promote rapid sedimentation by limiting internal wave energy; and (3) guide the location of deep tidal slough channels away from the flood control levees and the wetlands covering the runway. The peninsulas will be separated from the site perimeter to limit predator access. Internal peninsulas will be located to provide a maximum fetch length of 3,000 ft. The location of the internal peninsulas are shown in Figure ES-3. Crest elevations will be +5 ft. with a top width of 10 ft. The peninsulas will be constructed with on-site borrow material and, if additional volumes are needed, with dredged material. The internal peninsulas are expected to have a 10-year design life, after which time sedimentation and vegetation colonization will have raised the surrounding marsh plain high enough so that the marsh rather than the peninsulas dampen internal wind waves. Over time as the peninsulas settle and subside into the tidal marsh, they will become high tide refugia within the middle and high marsh plains.

No internal peninsulas are proposed for the SLC parcel for three reasons. First, because the precise relationship of wind fetch length to limitations on marsh vegetation colonization is not certain, this project provides an opportunity to better evaluate this phenomenon. Second, the SLC parcel is smaller (250 acres) and its fetch distances are already within the 3,000 ft. range planned for the HAAF parcel. Finally, because the upper three feet of soil at the SLC parcel will be excavated for use as borrow material (see below), the peninsulas would have to be nearly 15 ft. tall to achieve the design crest elevation and would thus be difficult and expensive to construct. For these reasons, no internal peninsulas will be constructed on the SLC parcel and instead a tidal berm will be included adjacent to the flood control levee to protect it against erosion. The performance of the two parcels can be evaluated over time to improve our understanding of wind fetch processes on sedimentation and marsh vegetation colonization.

Levee Breaches and Pilot Channels

Two levee breaches are proposed, one for the HAAF site and another for the SLC site. Two breaches are needed because the outfall pipe alignment for the Novato Sanitary District currently bisects these two parcels and, unless the pipe is relocated, its protection requires the two parcels to be independent hydrologically (see Section ES-4.2.3 below). In addition to the levee breaches, pilot channels will be excavated through the outboard tidal marsh to provide unrestricted tidal exchange with San Pablo Bay. The pilot channels have been sited to cut through the narrowest portion of the outboard marsh in order to minimize impacts to this marsh. The dimensions of the levee breaches and pilot channels are presented in Table ES-4. The pilot channels will have the same depth as the levee breaches but will have narrower top widths in order to minimize construction impacts to the outboard marsh. Levee breach and pilot channel dimensions are sized for the equilibrium tidal prism, not the four times larger tidal prism when the levees are initially breached. This under-sizing is not expected to have adverse consequences on tidal exchange with San Pablo Bay nor on the evolution of the restored tidal marsh. Further analysis of the inlet dynamics is recommended for final design (see Section ES-7).

Lowering Outboard Levee

The existing outboard levee separating the HAAF and SLC parcels from San Pablo Bay will be lowered to varying elevations between +3.5 to + 5.0 ft. to provide high marsh and high tide refugia.

Borrow Materials

Borrow materials are required to construct the flood control levee and adjacent tidal berm (about 1.57 million cubic yards [mcy]), internal peninsulas (about 93,000 cy), and NSD outfall pipe protection levee (about 73,000 cy), for a total need of approximately 1.73 mcy. The project will generate about 1 mcy by excavating the upper 3 ft. of the SLC parcel. The remaining 0.73 mcy will come from several sources, including in descending order of preference: (1) adjacent or nearby clean borrow soils for the internal peninsulas, (2) using dredged material for the tidal berms adjacent to the flood control levee, (3) reusing existing levee material for the new flood control levee, (4) constructing the flood control levee initially to less than final design height and then using material gained from later construction activities such as the levee breach, pilot channel excavation and lowering of the outboard levee, (5) using additional surface soils from the HAAF parcel if suitable, and (6) importing construction fill. Preliminary analyses indicate that the range of available sources should provide adequate soil volumes for all the construction needs, without relying upon the costly import of construction fill.

Interior Channel Formation Relative to Existing Paved Surfaces

The internal peninsulas are designed in part to "steer" the location of larger tidal slough channels away from buried paved surfaces that might interfere with channel development. However, in one location, the buried runway would be up to 1 ft. higher than anticipated channel depths. This interference is not considered significant since the channel should be able to increase in width to accommodate expected tidal flows. Three other paved areas in the revetment area north of the runway would be up to three feet higher than the anticipated channel depths. In these locations, removal of the paved surfaces is recommended to allow natural slough channel formation.

Existing Infrastructure

NSD Pipeline and Dechlorination Facility

Relocation of the dechlorination facility to the NSD treatment plant is part of the Natural Gradient alternative. Two options are available to accommodate the NSD pipeline: (1) construct a new access levee between the HAAF and SLC parcels to protect the pipe and allow continued access by NSD personnel, which is the default configuration, or (2) truncate the outfall pipe so that it discharges directly into the restored wetland. This latter alternative would allow the HAAF and SLC parcels to become a single hydrologic unit with one rather than two levee breaches, which would be a preferred variation to the proposed design. Discussions are ongoing with NSD.

Drainage Facilities

Future drainage patterns following project completion will differ from the existing conditions. Rather than being collected in the perimeter drainage ditch and routed to the pump station at the northeast corner of HAAF to be pumped into San Pablo Bay, the inflows will gravity drain through the uplands and wetlands to San Pablo Bay through the levee breach. These changes will require reconstructing existing flap-gated culverts at new, higher elevations, installation of a small pump for part of the Landfill 26 drainage, and reconstruction of flap-gated culverts from Pacheco Pond. The plan assumes that the U.S. Army, as part of base closure, will address drainage of the adjacent Las Gallinas Valley Sanitary District and California Quartet/Bel Marin Keys Unit V properties.

Dredged Material Engineering

The Natural Gradient alternative will use dredged material to raise the site to final elevations in the non-tidal areas and to target elevations in the tidal areas. This design alternative can use a combination of sand and fine-grained dredged material or only fine-grained dredged material in order to accommodate the range of potential dredged material sources in the San Francisco Bay. All dredged material considered for use at Hamilton will have chemical concentrations and sediment toxicity below levels that could harm wetland biota.

Comparing Use of Sandy Versus Fine-Grained Dredged Material

Dredging projects in the San Francisco Bay produce a range of grain sizes in the material dredged, ranging from fine-grained bay muds to coarser sands. These different material types have several differences in their properties for constructing wetland restoration projects and for supporting wetland ecosystems. The design of the Natural Gradient alternative takes these properties into account in determining the location, elevations, and relative amounts of each type of dredged sediment.

The non-tidal habitats will be constructed with a thick foundation of sandy dredged material capped by one to two feet of fine-grained dredged material. The tidal habitats will be constructed primarily with fine-grained dredged material, though sandy dredged material foundation could be used in the deeper portions of the site.

Dredged Material Volumes

Volumes of needed dredged material were calculated separately for the non-tidal and tidal portions of the site. The Natural Gradient alternative proposes to use sand and fine-grained dredged material in the non-tidal areas. A total of approximately 1.8 mcy of sand would be placed as the lower and thicker layer, and approximately 0.3 mcy of fine-grained material would be placed on top of the sand to provide the substrate for the seasonal ponds and wetlands. Several questions remain regarding the long-term behavior of this combination of dredged material to achieve the desired ecological objectives; additional studies will be performed prior to completion of final design to investigate these issues.

The Natural Gradient alternative proposes to use primarily fine-grained dredged material for the tidal wetlands, with the possibility that sand would be placed first in the deeper areas at least 1 ft. below the final constructed surface. Assuming that only fine-grained dredged materials are used, the HAAF tidal wetland area could accept up to 5.0 mcy and the SLC tidal wetland area could accept another 3.5 mcy, for a total capacity of up to 8.5 mcy. The Natural Gradient design could also be constructed using lesser total quantities of dredged material, with the difference being a longer time for evolution of the tidal wetlands because of the increased volume of natural sedimentation required.

Dredged Material Potential Sources

Potential sources of dredged material include both maintenance and new work dredging projects. Potential sources of new work dredging project material include the Port of Oakland -50 ft. project, Southhampton Shoal, and Concord Naval Weapons Station. These projects together could supply up to 10 mcy of sandy material and 9 mcy of fine-grained material. Potential sources of maintenance dredging material include up to 18 projects based on probable timing, location, dredging methods, material type, and material history. The average annual dredging volume of these 18 projects is 2.2 mcy, of which 1.7 mcy is fine grained and 0.5 mcy is sandy. Assuming a 3 to 5 year construction period for this project, between 6.6 and 11 mcy of maintenance dredged material could be available for Hamilton.

Dredged Material Offloading

Four options were considered for offloading dredged material at Hamilton: a deep water site, a shallow water site, dredging a deep water channel close to the site, and dredging a shallow water channel close to the site. The preferred alternative proposes that dredged material will be delivered by barge from the dredging locations, to an unloading pumpout facility located on a moored barge. A submerged pipeline will carry the dredged material in a slurry onto the site. The preferred approach is a deep water offloading facility sited in San Pablo Bay at -16 ft. MLLW, which would allow dredgers the maximum flexibility to use the largest available barges at all tidal stages. This deep water location would be 24,000 ft. from the site and would require booster pumps to move the slurry onto the site. A shallow water facility in San Pablo Bay at -8 ft. MLLW may also be located closer to the shore for use by smaller dredging projects, which would shorten the pumping distance to approximately 15,000 ft. These offloading facilities could be operated simultaneously to accommodate concurrent dredging projects. Options to dredge shallow or deep channels closer to the site were dropped from consideration because of the cost to dredge and maintain these channels.

Cost Estimate

The preliminary cost estimate for the Natural Gradient alternative considers two categories of costs: site preparation and dredged material placement. Site preparation costs include construction of the flood control levee, tidal berm, internal peninsulas, accommodation of the NSD pipeline and dechlorination facilities, levee breaches, outboard marsh pilot channels, relocation or removal of other utilities, seeding and planting, and any other grading needed. Not included in the cost estimate are demolition and removal of remaining structures at HAAF and SLC; it is assumed that the U.S. Army and others will complete these activities prior to property transfer. Site preparation costs are estimated at approximately $18 million. However, if the U. S. Congress designates Hamilton as a beneficial reuse site then 75 percent of these costs will be paid by the federal government (U.S. Army Corps of Engineers) and the remaining 25 percent would be the "local sponsor" cost share. Thus, the local sponsor cost would be $4.5 million.

Dredged material placement costs depend on a number of factors, including the relative proportions of sandy and fine-grained dredged material placed at the site. Costs also depend on the source of the dredged material (maintenance versus new work dredging) as it relates to the cost differential between placement at Hamilton and disposal at an in-bay location or the deep ocean site. This cost estimate assumes the total volume of dredged material needed to construct the site features is used. Dredged material placement costs attributable to the Hamilton project would range from approximately $14 million to $21 million. Because the larger dredging projects are co-sponsored by the federal government, if the U. S. Congress designates Hamilton as a beneficial reuse site then the 75 percent cost sharing described above will be paid by the federal government and the remaining 25 percent would be the local sponsor cost share. Thus, local sponsor costs would range between $3.5 million to $5.3 million.

The total project cost will therefore range from $32 million $39 million.

The local sponsor share would range from $6 million to $9.75 million.

ES-5.1 NATURAL SEDIMENTATION ALTERNATIVE

The Natural Sedimentation alternative is not the preferred alternative but would be implemented if no dredged material becomes available for wetland restoration. This alternative meets many of the project goals and objectives with the exceptions discussed below. This alternative would not use dredged material and instead would rely on natural sedimentation to raise the site to elevations suitable for tidal marsh establishment. Non-tidal areas could not be constructed at elevations above the limits of tidal influence because of the lack of fill material; consequently, an additional levee would be constructed across the southeastern limit of the panhandle area and managed perennial and seasonal ponds and wetlands would be created behind this new levee with the use of water control structures (Figure ES-6).

The major differences in the Natural Sedimentation alternative are:

- the 80/20 split of tidal and non-tidal habitat cannot be achieved (see Section ES-5.1).
- the non-tidal habitats are significantly different hydrologically and ecologically and do not include the transitional uplands and corridor areas (see Section ES-5.2)
- the non-tidal habitats would require active management in perpetuity
- no tidal pannes would be created
- the internal peninsulas would be located to achieve 2,000 ft. fetch lengths rather than the 3,000 ft. of the Natural Gradient alternative, to account for the greater water depths of the unfilled tidal portions of the site, and
- the timeline for establishment of tidal wetlands is longer (see Section ES-6.0).
- the cost of constructing the project would be approximately $15 million.

The remaining project components are identical to the Natural Gradient alternative and thus are not described here.

ES-5.1.1 Mix of Tidal and Non-Tidal Habitat

The Natural Sedimentation alternative does not use dredged material to raise site elevations above tidal influence, therefore it is limited in its ability to establish non-tidal habitat. Instead of the target of 80 percent tidal and 20 percent non-tidal habitat that the HRG established, the Natural Sedimentation alternative provides approximately 92 percent tidal wetlands and 8 percent non-tidal managed seasonal ponds and wetlands and perennial open water and emergent marsh.

ES-5.1.2 Description of the Non-Tidal Habitat

Under the Natural Sedimentation alternative, the non-tidal habitats would be constructed at existing grade behind a "cross panhandle" levee fitted with water control structures. The water supply for these areas would be rainfall, freshwater inputs from Landfill 26, one of the NHP outfalls, and Pacheco Pond and controlled tidal flows through a gated culvert. Storm outflows into the tidal wetland would occur by gravity drainage during low tide through separate flap-gated culverts (see Figure ES-6). Because no dredged material would be used in this alternative, no uplands and wildlife corridor areas would be created and thus there would not be a "natural gradient" from the upland to tidal portions of the site; instead, the restored wetlands would end abruptly at the levees. The non-tidal wetlands would be largely perennial emergent marsh and open water areas rather than the goal of mainly seasonal ponds and wetlands.

The seasonal wetland and fully aquatic habitats created in this alternative will have variable salinities. The dominant plant species in this system will be salt-tolerant plants that will reach their maximum productivity from early spring to late summer. Plant species that will likely be found in the saline seasonal wetlands include salt grass, pickleweed, fat-hen (*Atriplex triangularis*), brass buttons (*Cotula coronopifolia*), gumplant (*Grindelia humilus*), alkali bulrush (*Scirpus maritumus),* and alkali heath.

The diversity and types of wildlife species occurring in these habitats would depend in large part on the extent of the habitats, the depth and extent of water, and the type and amount of vegetation present. The presence of shallow water, even on a seasonal basis, would provide suitable foraging habitat for many shorebirds (especially during high tide, when tidal mudflats are inundated), gulls, waders, and dabbling ducks. If salt marsh vegetation (such as pickleweed, salt grass, or gumplant) is well developed, then bird species such as the savannah sparrow or song sparrow might nest in these habitats. Black rails might nest in the seasonal wetlands adjacent to broader pickleweed tidal marshes. Salt marsh harvest mice are expected to occur in seasonal wetlands if sufficient cover of pickleweed is present. If grasses dominate, then more upland mammals (e.g., western harvest mice, deer mice, and California voles) would be expected to occur.

ES-6.1 TIMELINE FOR TIDAL WETLAND RESTORATION

Both project alternatives rely on natural sedimentation to raise the tidal portions of the site to marsh plain elevations. Because no dredged material will be used, no tidal pannes will be constructed as part of the Natural Sedimentation alternative. The Natural Sedimentation alternative begins at existing site elevations, which average -5 ft. at the HAAF site and -8 ft. at the SLC (after excavating the upper 3 ft. of soils as borrow material). However, the Natural Gradient alternative establishes initial site elevations at 0 to +2 ft. through placement of dredged material. The major differences between the two alternatives for establishing tidal marsh, then, are (1) the total amount of natural sedimentation needed and thus the elapsed time required to fill the site and (2) the time needed to place dredged material.

Sedimentation rates are a function of (1) the suspended sediment supply in the inflowing tidal waters, which varies seasonally and from year to year, (2) site elevations, with higher elevations having less tidal inundation and thus less opportunity for sediments to deposit, and (3) sediment resuspension due to wind waves and tidal flows.

To predict the time required to reach marsh plain elevations, a brief analysis was performed relating expected sedimentation rates to site elevations. Prediction of long-term sedimentation rates is difficult and uncertain. Thus, the analysis generated a range of time to reach target elevations based on a range of expected sediment concentrations. Two ecologically meaningful target elevations were considered: MHW, which is the upper elevation for cordgrass-dominated low marsh and the lower elevation for pickleweed-dominated middle marsh, and MHHW, which is the upper elevation for middle marsh and the lower elevation for high marsh comprised of a mixture of salt-tolerant plant species. Finally, the analysis included an assumption that the outboard levee would be breached four years later under the Natural Gradient alternative, which is the expected upper limit of time to place the dredged material.

Combining these factors of estimated construction time with the expected sedimentation rates, the anticipated time required to reach the MHW and MHHW elevations on average are presented in Table ES-5. Because the estimates have a margin of error of at least five years, all times are rounded to the nearest five-year increments. Near the tidal inlet (termed the "front marsh" in Table ES-5), the Natural Gradient alternative accelerates reaching the MHW average elevation from between no difference to five years, and the MHHW average elevation from between no difference to ten years, relative to the Natural Sedimentation alternative. Away from the tidal inlet (termed the "back marsh" in Table ES-5), the Natural Gradient alternative accelerates reaching the MHW average elevation from between five and ten years, and the MHHW average elevation from between five and fifteen years, relative to the Natural Sedimentation alternative. These results are shown as a comparative project timeline in Figure ES-7.

ES-7.1 CONSIDERATIONS FOR FUTURE STUDY

Additional Information Needs Related to Base Closure, Novato Sanitary District Facilities, and Adjacent Properties

Following is a listing of further studies that are desirable to clarify issues related to the Hamilton Wetlands Restoration project.

- It is necessary to know how the Army base closure and transfer process plans to resolve issues of contaminants on site and the availability of clean fill material onsite. This information will affect quantity and cost estimates for levee, peninsula. and tidal berm construction.
- It is necessary to know how the Army base closure and transfer process plans to resolve the perimeter drainage issues, in particular flow from adjacent areas.
- A feasibility study of options for resolving issues related to the Novato Sanitary District's dechlorination station and outfall line is needed. It should include an assessment of the ramifications of levee and internal berm construction above and adjacent to the existing pipeline, and the potential advantages of having the pipeline discharge to the site.
- The SLC site wetlands delineation needs to be quantified.
- Including the portion of the GSA Phase II property between Landfill 26 and the seasonal wetlands in the project needs to be considered to make the area topographically and hydrologically contiguous and functionally integrated and omit the flood control levee in that area
- There is a need for further investigation into regional opportunities to expand the restoration area to include the California Quartet Bel Marin Keys Unit V parcel.
- Further investigation and coordination with the NHP is required to define the acceptable methods and elevations for material placement on and adjacent to the NHP's levee, so that settlements of the levee and of nearby structures are not significantly impacted.

Wetland Design Development Studies

Following is a listing of additional studies that are needed to be implemented to refine the conceptual designs and performance estimates included in this report.

- Conduct site-specific geotechnical investigations to establish the basis for final levee design.
- Conduct field investigations at other wetland sites to evaluate levee performance in regard to stability, settlement and scour/erosion.
- Once the specific dredging projects (at least the major contributors) supplying material to this project have been identified, evaluate and decide on the potential off-loader locations and the contracting methods for material off-loading and placement.
- Refine estimates of the time frame for tidal wetlands evolution by:

  - Conducting detailed hydrodynamic and sediment transport modeling to refine the estimates of the rate and distribution of sedimentation
  - Gathering additional existing data and conducting field monitoring to refine estimates of suspended sediment supply to the tidal wetlands
  - Conducting field investigations at several reference tidal marshes created using dredged materials
  - Conducting field investigations of other restored tidal marshes to assess vegetation colonization rates

- Conduct field investigations at several reference San Francisco Bay tidal marshes created using dredged materials to optimize the target fill elevations.
- Refine the internal peninsula design based on further investigation of wind-wave impacts on sedimentation rates, vegetation colonization rates, and peninsula erosion and subsidence.
- Evaluate the expected persistence of the internal peninsulas using field reconnaissance at other wetland locations.
- Conduct detailed hydrodynamic modeling of inlet dynamics to characterize the potential for scour in and adjacent to the inlet.
- Conduct field surveys of other wetland locations and geomorphic analysis to assess the evolution of the tidal wetland inlet channel across the marsh and mudflat.
- Characterize the effects of removing some or all of the outboard levee on wave action, flooding, and wetland development.
- Conduct field surveys to observe vegetation and hydrologic characteristics of analogous seasonal wetlands created on sand and dredged Bay Mud substrates in order to refine the seasonal wetlands design. The design of the upper layers of the seasonal wetlands fill will require further analysis to define the material type and placement requirements that will result in acceptable permeability and ponding characteristics.
- Conduct field surveys to observe the topography, hydrology, and salinity of reference tidal pannes in order to refine the tidal panne design.
- Specify design features (invert elevation, flow capacity, etc.) for the hydraulic control structure(s) between Pacheco Pond and the panhandle necessary to mitigate for potential flood impacts and/or improve Pacheco Pond flood conditions.
- The results of the Section 204 Study of the Hamilton Project by the U.S. Army Corps of Engineers, San Francisco District should be considered and/or incorporated into subsequent and final project designs.
- During subsequent project investigations and the final design the dredged material supplies for the project need further detailed evaluation, planning and coordination.

Table ES-1 Target Habitats

Habitat	Typical Flora	Typical Animals	Typical Birds	Special Status Species	Potential Nuisance Species	Elevation Range	Water Source	Frequency of Inundation
Upland	Annual & perennial grasses (including *Leymus triticoides*), forbs, shrubs	Mule deer, jack rabbit, California vole, broad-handed mole, lizards, snakes, fox, raccoon, striped skunk	raptors, sparrows, warblers, mourning dove, Anna's hummingbird, finches, California towhee	Burrowing owl, loggerhead shrike, northern harrier	Trees would threaten levee integrity	above 7 ft (100 year high tide)	Precipitation, localized runoff & drainage	No standing water
Seasonal Wetland	Unvegetated areas interspersed with grasses, rushes, bulrushes, forbs, cattail, pickleweed	Pacific treefrog, common garter snake, gopher snake, Botta's pocket gopher, gray fox, coyote, raccoon, aquatic invertebrates	shorebirds, dabbling ducks, wading birds, raptors, passerines	Salt sarsh common yellowthroat, northern harrier	A monoculture covering the entire area would be undesirable. Feral cats, unleashed dogs, red fox.	above 5 ft. (above representative spring tide)	Precipitation, localized runoff & drainage, estuary	Seasonal. Infrequently with extreme tides or tides coupled with storm surge.
Tidal Panne	Primarily unvegetated, seasonal algae	Aquatic invertebrates, minimal use by mammals, reptiles and amphibians, due to lack of cover	primarily shorebirds and gulls, occasionally ducks and wading birds	Salt marsh bird's beak (at edges), western snowy plover, California least tern		4.5 ft. (representative spring tide)	Precipitation and tidal flooding from estuary	Seasonal, with spring tides and other extreme tidal events
Tidal Marsh Ponds	Unvegetated	Copepods, cladocera, small fish	shorebirds, dabbling ducks, wading birds			approx. 3 to 4 ft.	Precipitation and tidal flooding from estuary	Normally inundated, can dry in summer between spring tides
Tidal Marsh	**Low marsh:** cordgrass **Mid-marsh:** pickleweed **High marsh:** salt grass, gum plant	Common garter snake, gopher snake, western harvest mouse, deer mouse, California vole	Rails, marsh wren, sparrows, raptors	California clapper rail, black rail, salt marsh harvest mouse, San Pablo song sparrow, salt marsh common yellowthroat, peregrine falcon	Perennial pepperweed in high marsh and East Coast cord grass in low marsh. Asiatic clam and mitten crab.	**Low marsh:** MT (0.61ft) to MHW (2.86 ft.) **Mid-marsh:** MHW to MHHW (3.43 ft.) **High Marsh:** MHHW to 4.5 ft.	Estuary	**Low marsh:** twice daily tidal action **Mid-marsh:** at least daily high tide **High Marsh:** monthly spring tides
Intertidal Mudflats	Algae	Polychaetes, amphipods, snails, clams, fish (when inundated)	Dunlin, plovers, sandpipers, dowitchers, yellowlegs, long-billed curlew, willet, marbled godwit, ducks (when inundated)		Asiatic clam	MT (0.61 ft) to MLLW (-2.63 ft)	Estuary	Daily tidal cycle
Channels and Subtidal	**Channels:** may have fringe of cordgrass or bulrush **Subtidal:** algae, eel grass	Shrimp, planktonic and benthic invertebrates, fish	Diving ducks, pelicans, cormorant	California brown pelican, Sacramento splittail, striped bass, green sturgeon, Chinook salmon, steelhead trout	Non-native fish species and invertebrates	**Channels:** MHHW to ELW **Subtidal:** Below ELW	Estuary	**Channels:** daily tidal cycle **Subtidal:** permanently submerged

(1) MT = mean tide, MHW = mean high water, MHHW = mean higher high water, MLLW=mean lower low water, ELW=extreme low water

Table ES-2
ESTIMATED EQUILIBRIUM TIDAL WETLAND HABITAT TYPES

Channel Characteristics	Channel Order					Total
	1	2	3	4	5	
HAAF Site						
Total Length of Channels (ft)	141,109	46,046	13,148	4,597	1,300	206,200
Average top width at MHHW (ft)	2	6	22	80	269	--
Average Depth below MHHW (ft)	1.0	3.2	8.0	10.5	11.8	--
Subtidal Habitat (acres)	-	-	5.8	8.2	7.9	21.9
Intertidal Habitat (acres)	6.5	6.3	0.8	0.3	0.1	14.0
Marsh plain (acres)	--	--	--	--	--	376.5
SLC Site						
Total Length of Channels (ft)	65,974	26,035	8,990	3,801	1,300	106,100
Average top width at MHHW (ft)	2	6	22	80	200	--
Average Depth below MHHW (ft)	1.0	3.2	8.0	10.5	9.9	--
Subtidal Habitat (acres)	-	-	4.0	6.7	5.9	16.6
Intertidal Habitat (acres)	3.0	3.6	0.6	0.2	0.1	7.5
Marsh plain (acres)	--	--	--	--	--	188.1

Note: Calculations assume a total drainage density of 500 feet/acre and constant bifurcation ratio. The inlet channel length is not included in the subtidal channel acreage.

Table ES-3
TIDAL CHARACTERISTICS AT HAMILTON ARMY AIRFIELD

(based on Petaluma River Entrance Tide Gauge #941-5252)

	NGVD Datum (feet)	MLLW Datum (feet)
100-year high tide	7.00	9.63
10-year high tide	6.00	8.63
Mean highest annual tide	4.68	7.31
Mean Higher High Water (MHHW)	3.43	6.06
Mean High Water (MHW)	2.86	5.49
Mean Tide Level (MTL)	0.61	3.24
Mean Low Water (MLW)	-1.63	1.00
Mean Lower Low Water (MLLW)	-2.63	0.00

Note: NGVD is mean sea level of 1929. Tidal terms are defined in Appendix B.

Sources: USACE SFD (1984), Tides and Currents tide prediction software, and National Oceanic and Atmospheric Administration (NOAA) tidal benchmark data.

Table ES-4
INITIAL TIDAL WETLAND INLET DIMENSIONS

	HAAF Site Inlet Dimensions		SLC Site Inlet Dimensions	
	Levee Breach	Outboard Marsh Pilot Channel	Levee Breach	Outboard Marsh Pilot Channel
Cross-Sectional Area (ft^2)	2,500	1,600	1,200	800
Channel Depth (ft, bottom elevation)	- 8.5	-8.5	-5.5	-5.5
Channel Top Width (ft)	280	165	220	100
Channel Bottom Width (ft)	155	40	120	20
Channel Side Slope (H:L)	1:4	1:5 - 1:10	1:4	1:5 - 1:10
Channel Length (ft)	200	800	50	200
Channel Excavation Volume (yd^3)	25,500	24,900	7,900	3,400
Channel Surface Area (acres)	1.3	3.0	0.5	0.6

Table ES-5
TIME (YEARS) REQUIRED FOR SEDIMENTATION TO REACH AVERAGE TIDAL PLAIN ELEVATIONS[a]

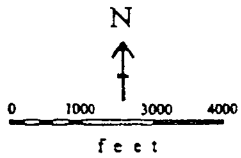
	Natural Gradient Alternative for HAAF and SLC[b]		Natural Sedimentation Alternative[a] for Front Marsh HAAF[d]		Natural Sedimentation Alternative[c] for Back Marsh HAAF[e] and SLC[f]	
	200 mg/l	350 mg/l	200 mg/l	350 mg/l	200 mg/l	350 mg/l
1. Years After Breach Outboard Levee (based on expected sedimentation rates)						
MHW	15	5	25	10	30	15
MHHW	25	10	40	15	45	20
2. Years After Start Project (reflects actual construction times shown in Figure 7-1)						
MHW	22	12	28	13	33	18
MHHW	32	17	43	18	48	23
3. Amount of Time Saved to Reach Target Elevations with natural gradient alternative relative to natural sedimentation alternative (years in #2 above for natural sedimentation minus natural gradient, rounded to nearest five years)						
MHW	na	na	5 (28-22)	0 (13-12)	10 (33-22)	5 (18-13)
MHHW	na	na	10 (43-32)	0 (18-17)	15 (48-32)	5 (23-18)

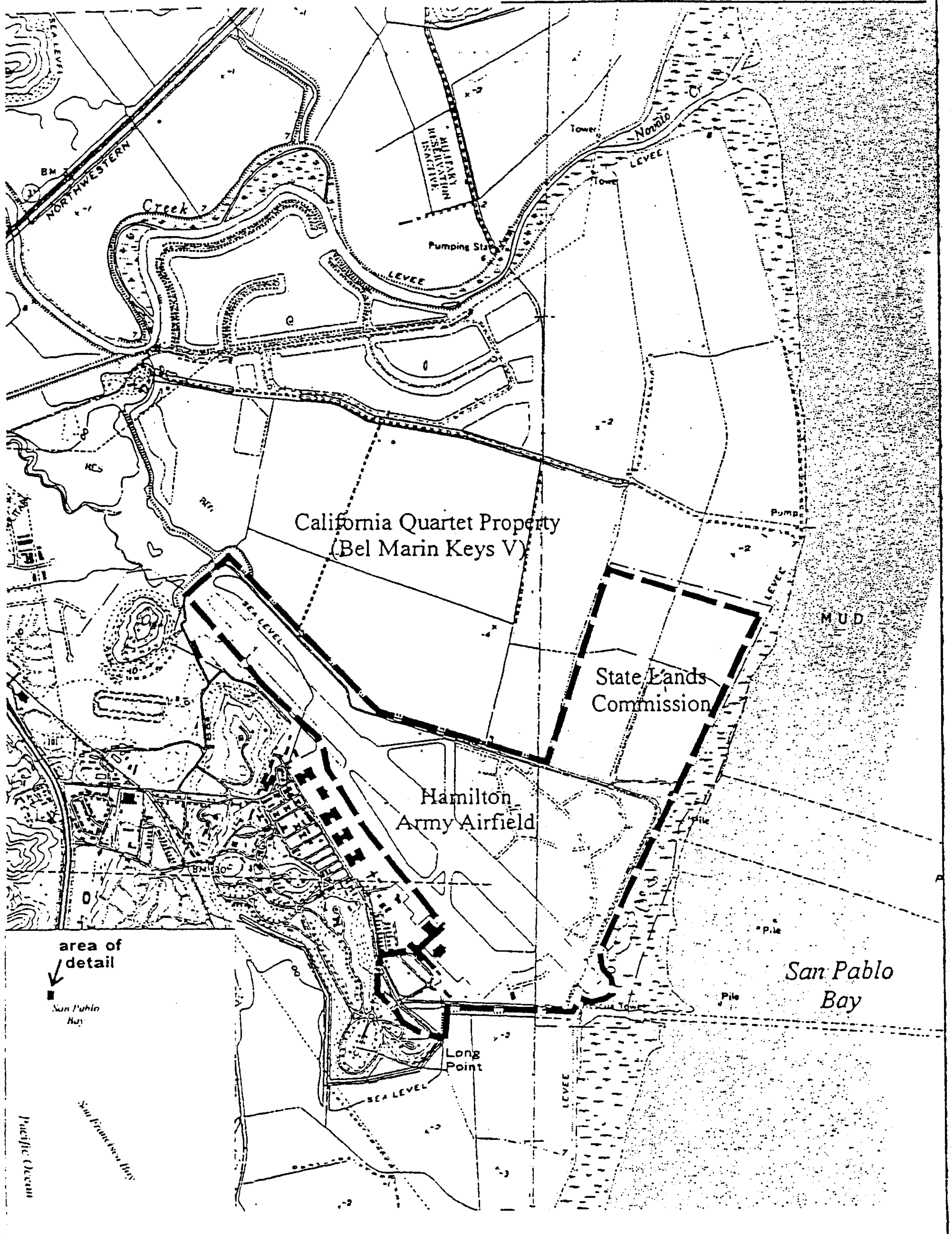
(a) = Estimated times are rounded to the nearest 5 year mark
(b) = Assumed average starting elevation of +1 foot
(c) = Assumed average starting elevation of -5 feet. HAAF
(d) = Front marsh is wetland areas closest to inlet
(e) = Back marsh is wetland area furthest from the tidal inlet (see Figure 5-5)
(f) = SLC starting elevation at -8

figure ES-1

Hamilton Wetland Restoration

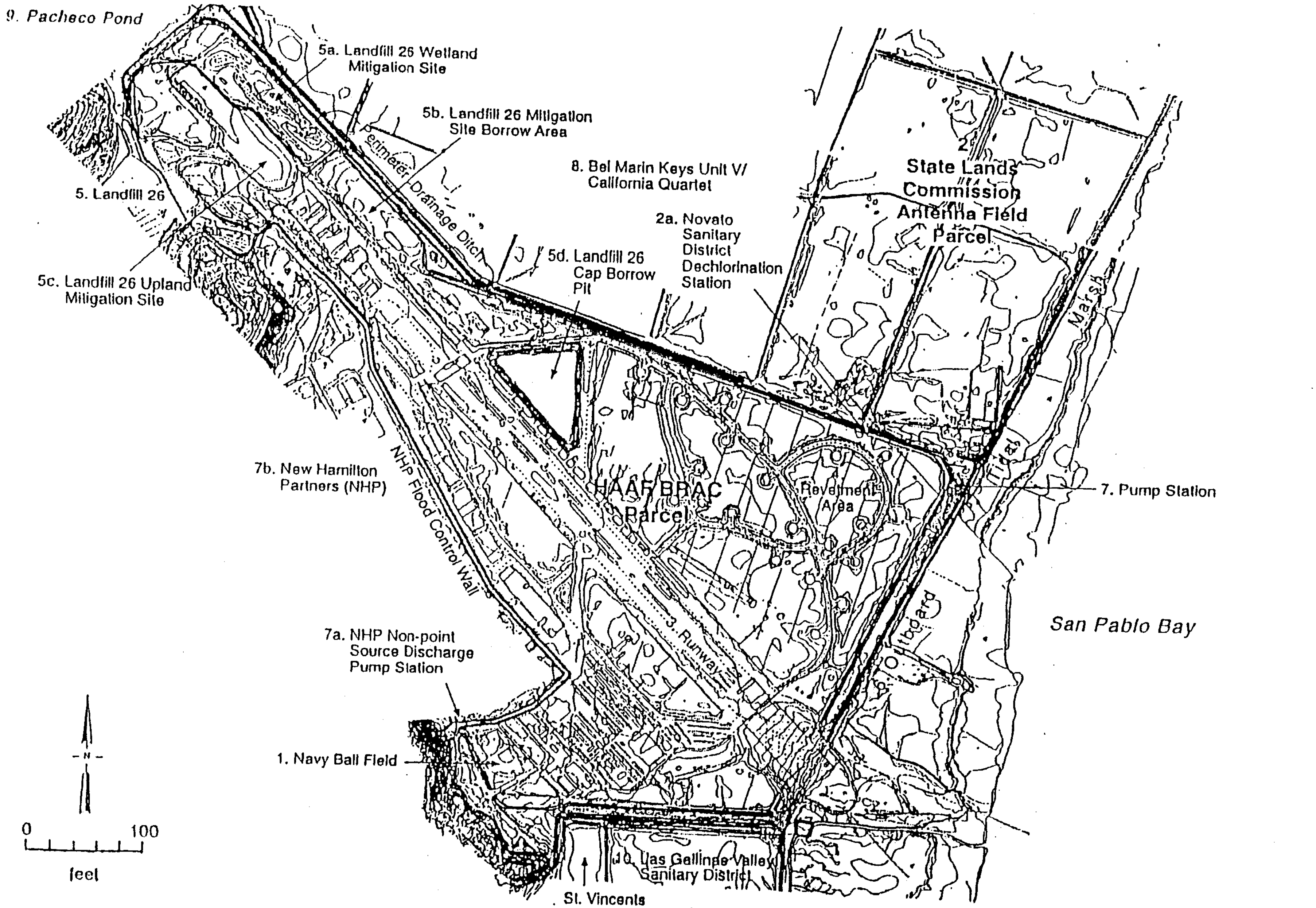
Regional and Site Location Map





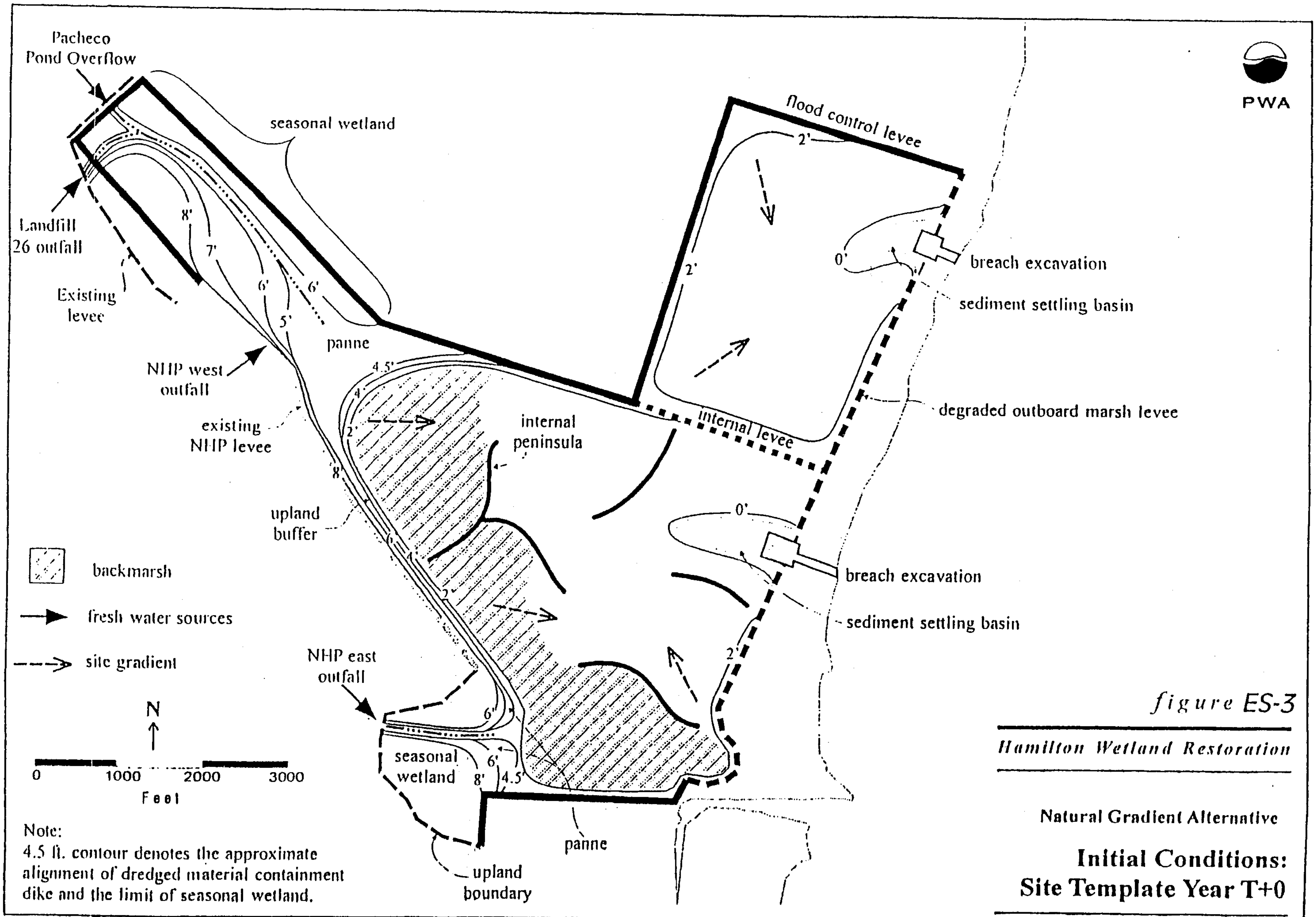
HamRegMap.cdr 3.24.98

PWA



Project No. 971185NA	Hamilton Hamilton Wetlands Conceptual Plan	SITE PLAN	Figure ES-2
Woodward-Clyde			

971185NA-22DO/0403



Note:
4.5 ft. contour denotes the approximate alignment of dredged material containment dike and the limit of seasonal wetland.

figure ES-3

Hamilton Wetland Restoration

Natural Gradient Alternative

Initial Conditions:
Site Template Year T+0

hm1.cdr

DRAFT

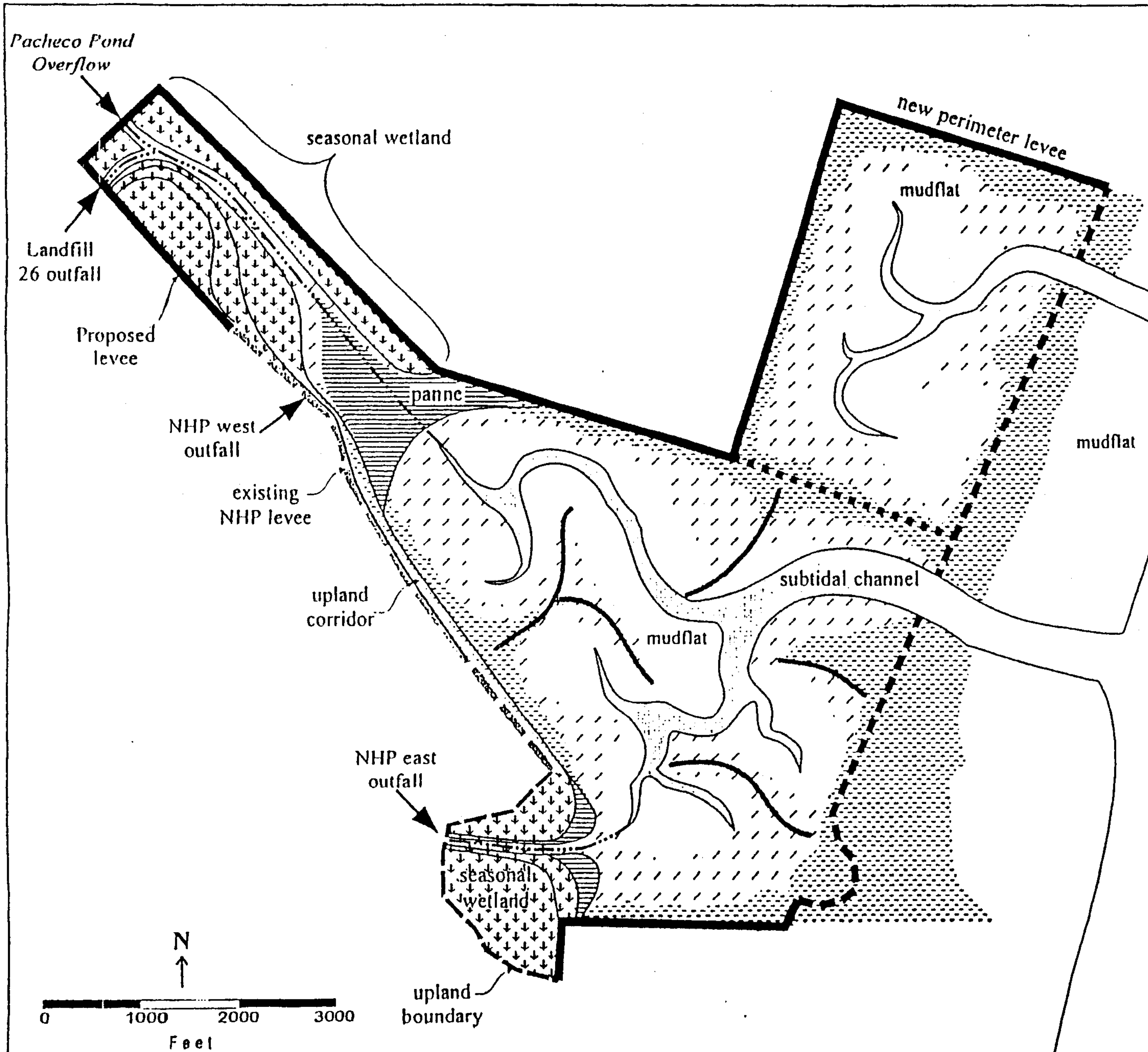


figure ES-4

Hamilton Wetland Restoration

Natural Gradient Alternative

Evolution at Year T + 10

Hm2.cdr 2.9.98

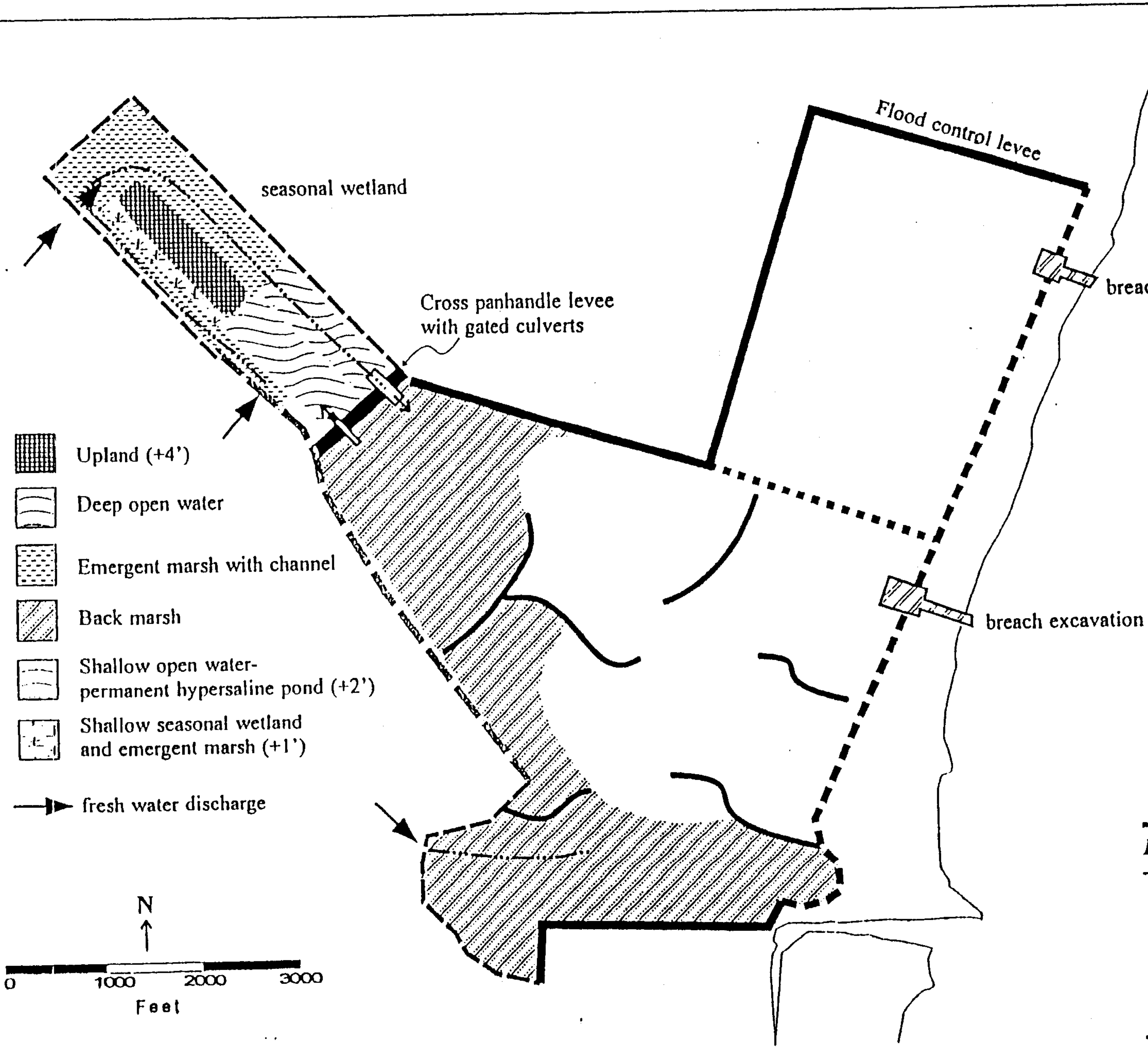


figure ES-6

Hamilton Wetland Restoration

Natural Sedimentation Alternative

Initial Conditions:
Site Template Year T + 0

flm5.cdr 2.10.98

DRAFT

Appendix B

Notices of Preparation and Availability

Notice of Preparation

Subsequent Environmental Impact Report (SEIR)
Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh Record of Decision/Remedial Action Plan (ROD/RAP)

To: Interested Agencies, Organizations, and Individuals

Subject: Notice of Preparation of a Draft Subsequent Environmental Impact Report for the Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh Record of Decision/Remedial Action Plan

Lead Agency: California State Coastal Conservancy

Contact:
Attn: Tom Gandesbery
California State Coastal Conservancy
1330 Broadway, 11th Floor, Oakland, CA 94612
(510) 286-1015
tgandesbery@scc.ca.gov

A Record of Decision/Remedial Action Plan (ROD/RAP) has been developed by the U.S. Department of the Army (Army), the California Department of Toxic Substances Control (DTSC), and the San Francisco Bay Regional Water Quality Control Board (RWQCB). The ROD/RAP identifies proposed actions to address residual contamination present at the Hamilton Army Airfield (HAAF) Main Airfield Parcel and the adjacent Coastal Salt Marsh in coordination with construction of the Hamilton Wetland Restoration Project (HWRP). The HWRP was developed for the site and adjacent property in 1998, assessed for its environmental impact under NEPA and CEQA through an Environmental Impact Statement/Environmental Impact Report (EIR/EIS) in 1998, and authorized by Congress in 1999. The purpose of the HWRP is to restore the site to tidal and seasonal wetlands utilizing placement of dredged material. The California State Coastal Conservancy (SCC) is the intended future landowner of the site (after transfer from federal ownership) and is the local sponsor of the HWRP. Following completion of the HWRP construction and adaptive management period, it is anticipated the property will be transferred to the California Department of Fish and Game or the US Fish and Wildlife Service for long-term management.

DTSC and the RWQCB have determined that their approval of the ROD/RAP is a discretionary action that will require compliance with CEQA. The prior EIR/EIS for the HWRP assessed potential remedial actions on a general level, because the details of proposed remedial actions were not fully developed at the time. Now that the details of proposed remedial actions have been identified in the ROD/RAP, DTSC, RWQCB, and SCC have determined that a subsequent EIR (SEIR) needs to be developed to comply with CEQA. The SCC is acting as the lead agency for the SEIR. DTSC and the RWQCB are acting as responsible agencies for the SEIR.

The purpose of the SEIR is to inform decision-makers and the general public about the environmental effects of the actions contained within the ROD/RAP. The CEQA process is intended to provide public agencies with the environmental information required to evaluate a Proposed Project (in this case the ROD/RAP); to identify methods for reducing adverse environmental impacts; and to ensure that a range of alternatives is considered prior to the approval of the Project. The purpose of this Notice of Preparation (NOP) is to solicit comments about the Project, including possible alternatives, and the scope and content of the environmental information to be included in the SEIR, in accordance with CEQA.

A public scoping meeting will be held on Thursday, May 1, 2003 from 7:00 p.m. to 8:30 p.m. at the Marin Humane Society, 171 Bel Marin Keys Blvd., Novato, California. The scoping meeting will present an opportunity for SCC, DTSC, the RWQCB, and the Army to introduce the ROD/RAP to the public and to solicit comments from the public and agencies. Comments received at the public scoping meeting will be considered in the SEIR analysis.

The initial review and comment period for the Project will **commence on April 11, 2003 and will conclude on May 11, 2003**. Due to the time limits mandated by State law, comments must be sent at the earliest possible date but *no later than 30 days* after receipt of this notice and official commencement of the CEQA review period. Please send comments to the attention of Tom Gandesbery, at the address shown above, by May 10, 2003.

Project Title: Subsequent Environmental Impact Report for Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh Record of Decision/Remedial Action Plan

Project Location: Hamilton Army Airfield; Marin County, California

Project Description: See attached.

Date: April 10, 2003

MA / for

Tom Gandesbery, Project Manager
California State Coastal Conservancy

Summary Project Description
Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh
Record of Decision/Remedial Action Plan (ROD/RAP)

Site Description and History

Hamilton Army Airfield (HAAF) is a former military installation located on a diked and subsided bayfront parcel in the City of Novato, California. A perimeter levee excludes tidal waters from the Inboard Area of the former installation. The 644-acre Main Airfield Property parcel and other parts of HAAF were identified for closure under the Base Realignment and Closure (BRAC) Act of 1988. There are 10 acres of the parcel that lie outboard of the perimeter levee in the Coastal Salt Marsh. The remaining portion of the Coastal Salt Marsh (78 acres) is located on property owned by the State Lands Commission (SLC). Some of the sites being addressed in the ROD/RAP extend beyond the Army BRAC property boundary onto property owned by SLC. Figure 1 shows the areas that are the subject of the ROD/RAP. The Army anticipates transferring the HAAF Main Airfield Parcel to the California State Coastal Conservancy (SCC) for the Hamilton Wetland Restoration Project (HWRP).

The Inboard Area was used for a variety of military functions. These functions were supported by underground storage tanks, aboveground storage tanks, transformers and transformer pads, storm drain and sanitary sewer systems, the Former Sewage Treatment Plant (including sludge drying beds), fuel lines, revetment areas, and the Perimeter Drainage Ditch, which collected runoff from the Base as well as from some surrounding agricultural lands. Portions of the Coastal Salt Marsh were used to support Department of Defense operations on the main airfield. Activities within the Coastal Salt Marsh included emergency rescue operations in San Pablo Bay and disposal of construction debris. These activities were supported by transformers and transformer pads, a winch at the boat dock, and a burn pit at the East Levee Construction Debris Disposal Area. Additional features of the Coastal Salt Marsh include the Outfall Drainage Ditch, which receives stormwater runoff and drainage from the main airfield, and the Former Sewage Treatment Plant Outfall, which discharged surface water containing main airfield sanitary and industrial wastes from the Former Sewage Treatment Plant.

Contaminants detected at various sites within the Inboard Area and Coastal Salt Marsh include petroleum and associated combustion products, heavy metals, dioxins, volatile and semi volatile organic compounds (VOC), polychlorinated biphenyls (PCBs), pesticides, and herbicides. Residual PAHs are found in soils adjacent to the runway and residual DDTs are found in soils throughout the Inboard Area.

ROD/RAP Goals and Objectives

The ROD/RAP was developed by the U.S. Department of the Army (Army), Regional Water Quality Control Board (RWQCB), and the Department of Toxic Substances Control (DTSC).

The objectives of the ROD/RAP are:

- to render the Inboard Area suitable for use as open-space wetland restoration, and
- to remove and/or cover contamination in the Coastal Salt Marsh to protect its existing use as marsh habitat.

To achieve these objectives, environmental action contaminant concentration goals (action goals) protective of wetland receptors are established in the ROD/RAP. The action goals are based primarily on site specific ambient concentrations, in combination with San Francisco Bay Ambient sediments and NOAA effects-range low (ERL) sediment concentrations.

ROD/RAP Regulatory Considerations

This closed military facility is on the State's Cortese List, but not on the National Priority List (NPL). The Army is responsible for environmental remediation of the HAAF as the Department of Defense owner of the base at the time of closure under the BRAC Act of 1988.

The ROD/RAP identifies the proposed environmental response actions to be taken by the Army BRAC restoration program and additional environmental assurances to be provided by actions that the Army Civil Works Program will take through the HWRP to address potential risks associated with residual contaminants on the Main Airfield Parcel at HAAF and restoration of a wetland at HAAF.

DTSC and RWQCB are regulating these environmental actions as environmental response actions in accordance with the provisions of California Health and Safety Code and the RAP is being prepared in accordance with Chapter 6.8 of Division 20 of the California Health and Safety Code Section 25356.1. The RWQCB, with DTSC support, will be the lead state agency for oversight of the implementation of the ROD/RAP. The RWQCB, as authorized by the Porter Cologne Water Quality Control Act, will adopt site cleanup requirements (SCRs) that will ensure implementation of the final approved ROD/RAP. Additionally, the RWQCB will issue Waste Discharge Requirements (WDRs) to the U.S. Army Corps of Engineers and SCC regulating actual and potential discharges associated with implementation of the HWRP.

The Army anticipates transferring 630 acres of the HAAF Main Airfield Parcel to the California State Coastal Conservancy (SCC) in order that the land may be provided to the Civil Works program of the Army Corps of Engineers. The majority of the Coastal Salt Marsh is currently owned by SLC, having been transferred to the State of California from the Army in 1984. The HWRP is a federal project authorized by the Water Resources Development Act of 1999. The U.S. Army Corps of Engineers, San Francisco District, will construct and, for 13 years, monitor and adaptively manage the HWRP. The SCC, as the local sponsor, would be responsible for operation and maintenance of the HWRP from project completion forward. Following completion of the HWRP construction and adaptive management period, it is anticipated the property will be transferred to the California Department of Fish and Game or the US Fish and Wildlife Service for long-term management.

ROD/RAP Proposed Actions

The ROD/RAP presents the proposed environmental actions to be conducted by the Army necessary to protect public health and the environment based on the proposed future use of the property for wetland restoration. The Hamilton Reuse Plan designates the Main Airfield Parcel as open space for wildlife habitat restoration and wetland restoration use.

One of four different environmental actions are proposed to address risks to human health and ecological receptors in a wetland environment at each site included within the ROD/RAP:

- No Further Action;
- Excavation and Offsite Disposal;
- Manage In-situ, with Monitoring and Maintenance, for Army BRAC Sites; and
- Manage On-site, with Monitoring and Maintenance, for Army Civil Works Issues.

No Further Action

For sites where this is the proposed action, no further action will be taken, and there will be no restrictions placed on the use of the site.

Excavation and Offsite Disposal

For sites where this is the proposed action, the site will be excavated with the soils disposed of at an appropriate offsite landfill facility. For a site that has been determined to require excavation, the action goals included in the ROD/RAP will be utilized to determine the extent of excavation.

Manage In-situ, with Monitoring and Maintenance, for Army BRAC Sites

For Army BRAC sites where this is the proposed action, in-situ management will be based on a performance criteria of 3 feet of stable cover. In-situ management is proposed where residual concentrations exceed the action goals. The purpose of the cover is to eliminate or significantly reduce any potential risk associated with residual concentrations of contaminants, by preventing exposure of future wetland receptors to existing site soils.

Manage On-site, with Monitoring and Maintenance, for Army Civil Works Issues

For issues to be addressed by Army Civil Works where this is the proposed action, on-site management will be based on a performance criteria of 3 feet of stable cover or equivalent measures as agreed to by the Army and the State. The primary purpose of the cover is to eliminate or significantly reduce any potential risks associated with residual concentrations of Inboard Area-wide DDTs and PAHs in soils adjacent to the runway, by preventing exposure of future wetland receptors to site soils contaminated with these compounds.

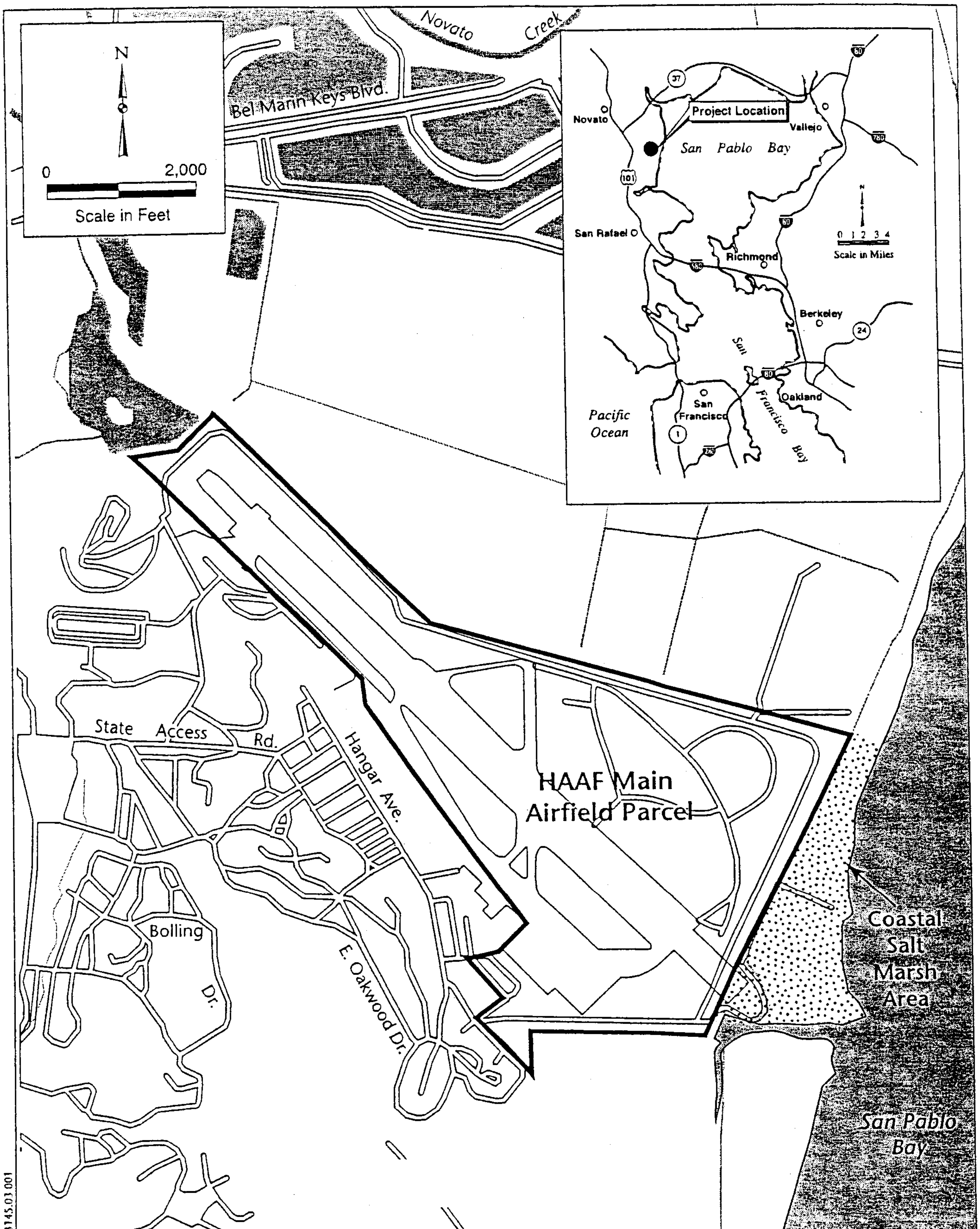
Institutional Controls

Institutional Controls in the form of land use restrictions will be required where contamination remains above the action goals. The Institutional Controls include the following:

- Grading, excavation, and intrusive activities must be conducted pursuant to a plan approved by the State.
- Restrictions on future use, such as a prohibition against the site for use as residences, schools, day care facilities, and other sensitive uses.
- Rights for State and federal agencies to access the property to carry out any response actions or other activities consistent with the purposes of the ROD/RAP in the future.

Follow up Areas or Activities

Several areas of the HAAF property that were recently assessed as potential concerns, based on an archived records search, photos, and interviews, are currently being considered for further investigation and potential inclusion in the ROD/RAP.



Jones & Stokes

Figure 1
Hamilton ROD/RAP Project Area

Notice of Availability/Fact Sheet
Subsequent Environmental Impact Report (SEIR)
Record of Decision/Remedial Action Plan (ROD/RAP)
Hamilton Army Air Field (HAAF), Novato, California

June 2003

Introduction

The Main Airfield Parcel Record of Decision/Remedial Action Plan (ROD/RAP) for Hamilton Army Airfield (HAAF) presents the actions to be taken at the former HAAF Main Airfield Parcel and in the adjacent coastal salt marsh area to address residual contamination. HAAF is located adjacent to San Pablo Bay in the City of Novato, Marin County, California. A location map is provided in the attached background information sheet. The ROD/RAP is described in the attached ROD/RAP Fact Sheet. HAAF is on the State's Hazardous Waste and Substances Sites (Cortese) List as a known site of hazardous materials release.

The California Coastal Conservancy (Conservancy), pursuant to the California Environmental Quality Act (CEQA), has prepared a Draft Subsequent Environmental Impact Report (SEIR) to evaluate the potential environmental effects of activities in the ROD/RAP and identify measures to minimize or avoid any environmental effects determined to be potentially significant. The Conservancy is the local sponsor of the Hamilton Wetland Restoration Project (HWRP). Approval of the ROD/RAP by the California Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) is a discretionary action subject to CEQA.

This fact sheet provides information on the SEIR, as well as information on the public comment period and public meeting for the SEIR.

What is an SEIR?

The SEIR is an informational document for decision-makers and the public. CEQA requires that decision-makers review and consider the EIR in their decision process for a project. The Conservancy is the lead agency responsible for preparing and certifying the SEIR. DTSC and RWQCB are responsible agencies for the SEIR and would rely on it to support their decision to approve or disapprove the ROD/RAP.

Wetland restoration of the main airfield parcel is proposed as part of the Conservancy's and U.S. Army Corps of Engineers' HWRP, which was evaluated in a final environmental impact report/environmental impact statement (EIR/EIS) that was certified in December 1998. Details of the nature and extent of residual contamination and the specific actions necessary to address it were not known when the HWRP EIR/EIS was completed. This subsequent EIR has been prepared to evaluate the potential for environmental impacts from the actions proposed in the ROD/RAP.

The ROD/RAP has been developed with the ultimate view toward wetland restoration on the site pursuant to the HWRP and also directly or indirectly supports other objectives of the HWRP. Those objectives include

- to design and engineer a restoration project that stresses simplicity and has little need for active management;
- to demonstrate beneficial reuse of dredged material, if feasible;
- to ensure no net loss of wetland habitat functions presently provided at the HAAF site;
- to create and maintain wetland habitats that sustain viable wildlife populations, particularly for Bay Area special-status species;
- to include buffer areas along the upland perimeter of the project area, particularly adjacent to residential areas, so that wildlife will not be impacted by adjacent land uses—perimeter buffer areas should also function for upland refuge, foraging, and corridors for some species;
- to be compatible with adjacent land uses and wildlife habitats; and
- to provide for public access that is compatible with protection of resource values and regional and local public access policies.

The SEIR identifies potential significant impacts to biological resources, air quality, noise, cultural resources, and transportation. All impacts would be reduced to a less than significant level by mitigation measures identified in the SEIR, except one transportation impact (added trips on State highways), which would be significant and unavoidable.

Public Comment Period – June 5 – July 21, 2003

The Coastal Conservancy is requesting public comments on the Draft SEIR for the ROD/RAP for Hamilton Army Airfield during the 45-day public comment period beginning June 5 2003 through July 21, 2003.

The Draft SEIR is available for public review online at the Conservancy's website at:

www.coastalconservancy.ca.gov

The Draft SEIR is available for review at the following address:

The Main Branch of the Novato Public Library
1720 Novato Blvd.
Novato, CA 94947
415-898-4623

The Draft SEIR is also available for review by appointment at:

Hamilton Administrative Record Library
Army BRAC Office
1 Burma Rd.
Novato, CA 94949
415-883-6386

All written public comments will be considered and responded to while finalizing the Draft SEIR. All persons who submit written comments on the Draft SEIR will receive a copy of the Conservancy's response to comments. **To be incorporated into the final document, written comments must be postmarked or submitted electronically by July 21, 2003.** The public is invited to provide electronic or written comments directly to:

Attn: Tom Gandesbery
California State Coastal Conservancy
1330 Broadway, 11th Floor, Oakland, CA 94612
(510) 286-1015
tgandesbery@scc.ca.gov

Public Hearing July 9, 2003

The California Coastal Conservancy, together with DTSC, RWQCB, and the Army, will hold a public meeting to explain the SEIR and the ROD/RAP to interested community members and receive public comments:

Wednesday, July 9, 2003
7:00 – 9:00 p.m.
Marin Humane Society
171 Bel Marin Keys Blvd.
Novato, CA 94949

For more information on the hearing, please contact Dean Amundson at 510-433-8962

Appendix C

Vehicle, Employee, and Worker Trip Estimates for Remedial Activities

Appendix C
Worker Vehicle and Soil Hauling Trip Estimates for Remedial Activities

Introduction

This appendix describes the three-step methodology used to estimate the number of construction equipment, workers, and worker vehicles (step one); the number of worker commute and soil haul truck trips (step two); and assignment of the daily trips throughout the work day (step three). To derive these estimates, assumptions have been developed in terms of the type of equipment necessary to perform the various tasks proposed in the ROD/RAP. This estimate is only for peak daily activity and thus overestimates the average daily trips associated with the project.

Vehicle trips from ROD/RAP activities would be primarily associated with worker commute trips and with hauling of contaminated soils off-site, excavation and off-site disposal, and on-site management. As shown on the approximate schedule provided in the ROD/RAP, the BRAC actions and HWRP actions would occur at different times. Consequently, vehicle trips for the actions undertaken by each program would not occur simultaneously.

It should be noted that implementation of the HWRP was evaluated in the 1998 HWRP EIR/EIS. Therefore, to the extent that on-site management of residual contamination overlaps with work pursuant to the HWRP, the vehicle estimates developed for this SEIR may be to some extent, be accounted for in the 1998 analysis.

It is also unlikely that excavation and disposal work would occur at all sites at the same time. Concurrent work at a majority of the sites would be inefficient for a contractor and would likely be limited by the inability of a contractor to provide the amount of equipment required. Two or more crews may be required to work simultaneously in the coastal salt marsh area in order to complete the remedial activities within the five-month non-nesting season for the California clapper rail. This is assumed to represent the peak level of work activity for excavation and off-site disposal.

Step One

The type and number of construction vehicles needed for remediation activity were estimated. For this project, a maximum of eight scrapers or excavators and two loaders were presumed to be needed for earthmoving and haul truck loading at any one time. Scrapers or excavators were assumed to be the primary type of equipment used to both excavate and move soil on-site. Actual equipment may vary but more than 10 heavy pieces of construction equipment are not presumed to be operated on any one day. The use of more equipment for this project could result in congestion problems because the vehicles would start to interfere with each other. A maximum of two loaders was presumed to fill trucks for either on-site soil movement or off-site soil hauling.

In addition to the scrapers/excavators and loaders, eight on-site dump trucks were assumed to be needed to move soil on-site, for fuel supply, for wetting down dry soil, for maintenance, and other on-site activity. A total of 18 construction vehicles are assumed to be used on-site at the peak of remedial activity.

An estimated eight 40 cubic yard dump trucks were presumed to support the off-site hauling activity. Eight dump trucks were presumed to allow off-site hauling of up to 640 cubic yards per day (presuming two trips/day as noted below) to support overall schedules.

Thus, a total of 26 vehicles/equipment were presumed as the estimate of potential peak activity. The likely total at any one time may be less than this estimate. The number of peak employees was estimated by assuming one employee per construction vehicle/equipment at peak, for a total of 26 employees.

Step Two

Each worker was presumed to arrive and exit the work site in his or her own personal vehicle. Some workers may commute together, but the assumption of individual vehicles is conservative. Fifty-two daily commute trips were estimated for period of peak activity on-site: 26 trips during the morning commute peak hours and 26 trips during the evening commute peak hours. In addition, 26 additional trips during the lunch hour were presumed, assuming that half of the worker vehicles are used to go off-site for lunch or to run errands.

As noted above, a total of 8 large dump trucks are presumed to be in use to haul soil off to appropriate disposal sites at the point of peak activity. The characterization of the material will determine the requisite disposal site. As a conservative estimate, it was presumed that 90 percent of the soil is hauled to the Altamont Landfill in Alameda County; 5 percent to the Redwood Sanitary Landfill in Novato; and 5 percent to the Kettleman Hills Landfill in Kettleman City. Each dump truck was assumed to make two runs per day, resulting in a total of 32 haul trips per day at peak.

Based on these estimates, at times of peak remedial activity, the estimated total trips would be 110 trips per day.

Step Three

In step three, the daily worker and soil haul trips were assigned throughout the day. It is assumed that travel would mostly be north and south along Highway 101 and east and west on Highway 37, except for local commute and lunch trips within Novato.

As noted above, 26 worker vehicle trips are assumed to occur during the morning commute peak hours and 26 worker vehicle trips during the evening commute peak hours. Some of these trips may be in the peak direction on Highway 101 (southbound in the morning and northbound in the evening). The 26 trips during the lunch hour would be off-commute peak hour trips.

As noted above, at the peak level of remedial activity, offsite transport of soil could generate an estimated 32 trips per day. It was assumed that most morning truck trips from the site would not occur during the morning peak commute because trucks are presumed to be loaded on-site in the morning and hauled out during the day; thus, 25 percent (2 trips) of the morning haul (outbound) trips were assumed to occur during the morning commute peak hours. Afternoon return haul trips could occur during the evening peak period; thus 75 percent (6 trips) of the inbound trips were presumed to occur during evening peak commute hours. The remainder of the morning and afternoon truck trips were assumed to occur at off-commute peak hours.

Thus, it was estimated that, at peak level of remedial activity, a total of 28 trips would occur during morning commute peak hours and 32 trips would occur during afternoon commute peak hours.

Appendix D

Special Status Plant and Animal Species Tables

Table -1. Special-Status Plant Species that Occur or Have Potential to Occur in or near the Project Area

Common and Scientific Name	Legal Status[a] Federal/State /CNPS	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Plants				
California suaeda (*Suaeda california*)	E/--/1B	Margins of coastal salt marsh	Extirpated from San Francisco Bay area; known only from Morro Bay	None observed during rare plant surveys
Fragrant fritilary (*Fritilaria liliacea*)	--/--/1B	Coastal prairie, coastal scrub, valley and foothill grassland; often on serpentinite	Central coastal counties	Habitat at HAAF and the project area not likely to be suitable; none observed during rare plant surveys
Hairless popcorn-jewel flower (*plagiobothrys glaber*)	CNPS 1A	Alkali meadow, coastal salt marsh	Coastal valleys from Marin County to San Benito County	Habitat present in one location; possibly extirpated
Marin dwarf-flax (*Hesperolinon congestum*)	T/T/1B	Serpentine soils in grassland or chaparral habitats	San Francisco Bay area	No suitable habitat at HAAF and study area; none seen during field surveys
Marin knotweed (*Polygonum marinense*)	--/--/3	Coastal salt marsh	Marin, Napa, and Sonoma Counties	None observed during rare plant surveys
Mason's quilwort (*Liliaeopsis masonii*)	--/R/1B	Brackish and freshwater marshes and swamps, riparian scrub	San Francisco Bay and Delta areas	No suitable habitat in the project area; none observed during rare plant field surveys
Mount Tamalpais jewelflower (*Strepanthus glandulosus* spp. *pulchellus*)	--/--1B	Chaparral and grasslands with serpentine soils	Marin County	No suitable habitat; none observed during rare plant field surveys
North Coast semaphore grass (*pleuropogon hooverianus*)	FSC/ST/ CNPS 1B	Freshwater wetlands	Scattered locations in Marin, Sonoma, and Mendocino counties	None observed; presence unlikely

Table D-1. Continued

Common and Scientific Name	Legal Status[a] Federal/State /CNPS	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Petaluma popcornflower (*Plagiobothrys mollis* var. *vetitus*)	--/--/1A	Habitat requirements uncertain; possibly salt marsh or mesic grasslands	Known only from type specimen in 1988 near Petaluma	None observed during rare plant surveys
Point Reyes checkerbloom (*sidalcea calycosa ssp. Rhizomata)*	FCS/CNPS 1B	Coastal freshwater marsh	North Coast and northern Central Coast: Marin, Sonoma, and Mendocino counties	None observed; presence unlikely
Point Reyes bird's-beak (*Cordylanthus maritimus* ssp. *palustris*)	--/--1B	Salt marshes	Northern California coastal counties	None observed during rare plant field surveys
Round-headed beaked-rush (*Rhynchospora globularis*)	--/--/2	Freshwater marsh	Sonoma County	None observed during field surveys
Soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*)	E/R/1B	Upper marsh elevations that are regularly inundated but above area receiving daily flooding	San Francisco Bay area counties	None observed during field surveys
Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*)	E/--/1B	Wet meadows, freshwater marsh, and riaprian scrub	Marin and Sonoma Counties	Habitat unlikely to occur in the project area; none observed during rare plant field surveys at HAAF
Suisun thistle (*Cirsium hydrophilium* var. *hydrophilum*)	E/--/1B	Brackish tidal marsh and salt marsh	Solano County	None observed during rare plant field surveys at HAAF
Swamp harebell (*Campanula californica*)	--/--/1B	Freshwater marsh, bogs, and mesic sites in conifer forests and grasslands	Central and northern counties of California	Habitat unlikely to occur in the project area; none observed during rare plant field surveys at HAAF
Thurber's reed grass (*Calamagrostis crassiglumis*)	--/--1B	Freshwater and mesic sites in coastal prairie	Northern California counties	None observed during rare plant field surveys at HAAF

Note: Unless otherwise indicated, all survey results are taken from U.S. Army Corps of Engineers 1996.

[a] Status explanations:

Federal

- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.
- PE = proposed for federal listing as endangered under the federal Endangered Species Act.
- PT = proposed for federal listing as threatened under the federal Endangered Species Act.
- C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
- SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
- -- = no listing.

State

- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- R = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
- FP = fully protected under the California Fish and Game Code.
- SSC= species of special concern in California.
- -- = no listing.

California Native Plant Society

- 1A = List 1A species: presumed extinct in California.
- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
- 3 = List 3 species: plants about which more information is needed to determine their status.
- -- = no listing.

Tab. 2. Special-Status Wildlife Species that Occur or Have Potential to Occur in or near the Project Area

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Invertebrates				
California freshwater shrimp (*Syncaris pacifica*)	E/E	In pool areas of low-elevation, low gradient, permanent streams; among live tree roots of undercut banks, under overhanging woody debri or vegetation	Endemic to Marin, Napa, and Sonoma Counties; extant populations in Lagunitas Creek in Marin Co., Huichica Creek in Napa Co., and Franz, East Austin, Sonoma, and Salmon Creeks in Sonoma Co.	No records; no suitable stream habitat
Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)	SC/--	Aquatic in vernal pools, ponds, and seasonal wetlands	San Francisco Bay Area including San Mateo, Sonoma, Alameda, and Marin Counties; Also in Solano and Sacramento Counties	No records; nearest record is at Bolinas; no suitable habitat at project site
San Francisco forktail damselfly (*Ischnura gemina*)	SC/--	Occurs in small, shallow ponds, marshes, and human-made channels with sparse emergent vegetation	Endemic to San Francisco Bay Area; extant populations in Marin County south to Santa Cruz County	No records; drainage channel near HAAF is considered marginal-quality habitat
Marin elfin butterfly (*Incisalia mossii*)	SC/--	Occurs in Marin County where Pacific stonecrop occurs	Marin County	No records; Pacific stonecrop was not found in the project area; no suitable habitat is present
Fish				
Tidewater goby (*Eucyclogobius newberryi*)	E/SSC	Shallow lagoons and lower reaches of streams	Coastal California	Observed at mouth of Novato Creek in 1945, although not assumed to be present any longer; tidal marshes in the project area and channel at project site are considered marginal-quality habitat

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Sacramento splittail (*Pogonichthys macrokepidotus*)	T/SSC	Generally restricted to tidal freshwater and low-salinity habitats	Generally upstream of San Pablo Bay	No records; no suitable habitat in the project area
Longfin smelt (*Spirinchus thaleichthys*)	SC/SSC	Spawns in lower Sacramento-San Joaquin River and Suisun Bay; prespawning adults and juveniles inhabit shoal areas of San Pablo Bay	Lower Sacramento-San Joaquin River, Suisun Bay, and San Pablo Bay	Could occur in or near the tidal marsh at and adjacent to HAAF
Central Valley Steelhead (*Oncorhynchus mykiss*)	T/SSC	Spawns in fresh water; juveniles rear in fresh and estuarine water before migrating to the ocean	Central Valley rivers and streams	Juveniles migrating to the ocean may use these areas to rear. Steelhead known in Novato Creek.
Chinook Salmon:		Spawns in fresh water; juveniles rear in fresh and estuarine water before migrating to the ocean	Central Valley rivers and streams	Juveniles migrating to the ocean may use these areas to rear; San Pablo Bay is within the critical habitat defined for winter-run chinook salmon. Chinook reported in Arroyo San Jose in 2001.
winter-run	E/E			
spring-run	T/C			
fall and late fall-run (*Oncorhynchus tshawytscha*)	PT/SSC			
Coho Salmon: Central California ESU (*Oncorhynchus kisutch*)	T/E	Cool, clear water with spawning gravel; migrate to the ocean to feed and grow until sexually mature	Punta Gorda, Humboldt Co. to San Lorenzo River, Santa Cruz Co.	Coho run extirpated in SF Bay, strays only.

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Amphibians				
California tiger salamander (*Ambystoma californiense*)	C/SSC	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy; does not occur in brackish water or saltwater habitats	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to Santa Barbara County	No records; no suitable freshwater habitat; not expected to occur in the project area
California red-legged frog (*Rana aurora draytonii*)	T/SSC	Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation and riparian species along the edges; may estivate in rodent burrows or cracks during dry periods	Found along the coast and coastal mountain ranges of California from Shasta County to San Diego County; Sierra Nevada from Butte County to Fresno County	No records from surveys conducted in the HAAF (Environmental Science Associates 1993) area; no suitable freshwater habitat; not expected to occur in the project area
Foothill yellow-legged frog (*Rana boylii*)	SC/SCC	Creeks or rivers in woodlands or forests with rock and gravel substrate and low overhanging vegetation along the edge; usually found near riffles with rocks and sunny banks nearby	Occurs in the Klamath, Cascade, north Coast, south Coast, and Transverse Ranges; through the Sierra Nevada foothills up to approximately 6,000 feet (1,800 meters) south to Kern County	No records; no suitable habitat

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Reptiles				
Northwestern pond turtle (*Clemmys marmorata marmorata*)	SC/SCC	Woodlands, grasslands, and open forests; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation	In California, range extends from Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through Sacramento Valley, and on the western slope of Sierra Nevada; range overlaps with that of southwestern pond turtle through the Delta and Central Valley to Tulare County	Recorded in Pacheco Pond along HAAF boundary.
Southwestern pond turtle (*Clemmys marmorata pallida*)	SC/SCC	Woodlands, grasslands, and open forests; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation	Occurs along the central coast of California east to the Sierra Nevada and along the southern California coast inland to the Mojave and Sonora Deserts; range overlaps with that of the northwestern pond turtle throughout the Delta and in the Central Valley from Sacramento County to Tulare County	No records; could occur in Pacheco Pond, but none were seen during field surveys
California horned lizard (*Phrynosoma coronatum frontale*)	SC/SSC	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging	Sacramento Valley, including foothills, south to southern California; Coast Ranges south of Sonoma County; below 4,000 feet in northern California	No records; potential low-quality habitat exists at HAAF; none were seen during field surveys

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Birds				
California brown pelican (*Pelecanus occidentalis californicus*)	E/E	Typically in littoral ocean zones, just outside the surf line; nests on offshore islands	Present along the entire coastline, but does not breed north of Monterey County; extremely rare inland	No suitable nesting habitat; salt marsh in the project area could provide seasonal foraging habitat; could occur year round in open water, but on an irregular basis; none observed onsite during field surveys. Observed in San Pablo Bay off outboard area.
Double-crested cormorant (*Phalacrocorax auritus*)	--/SSC	Winters along the entire California coast and inland over the Coast Ranges into the Central Valley from Tehama County to Fresno County; a permanent resident along the coast from Monterey County to San Diego County, along the Colorado River, Imperial, Riverside, Kern, and King Counties, and the islands off San Francisco; breeds in Siskiyou, Modoc, Lassen, Shasta, Plumas, and Mono Counties; also breeds in the San Francisco Bay area and in Yolo and Sacramento Counties	Rocky coastlines, beaches, inland ponds, and lakes; needs open water for foraging, and nests in riparian forests or on protected islands, usually in snags	No records; no suitable nesting habitat; observed just outside the saltwater marsh and in the wider channels in the marsh at HAAF
Ferruginous hawk (*Buteo regalis*)	SC/SSC	Open terrain in plains and foothills where ground squirrels and other prey are available	Does not nest in California; winter visitor throughout lowland California,, especially in agricultural areas, grassland and savanna	Potential winter visitor; could occur irregularly and in low numbers in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Cooper's Hawk *(Acciptier cooperi)*	--/SSC	Nests in a wide variety of habitat types, from riparian woodlands and digger pine-oak woodlands through mixed conifer forests	Throughout California except high altitudes in the Sierra Nevada. Winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range	Recorded occasionally on HAAF site in 1997; no nesting habitat on HAAF site observed.
Sharp-Shinned Hawk *(Accipiter striatus)*	--/SSC	Permanent resident in the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at mid elevations and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties. Winters over the rest of the state except at very high elevations	Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats	Recorded occasionally on HAAF in 1997, no nesting habitat found on HAAF.
Merlin *(Falco columbarius)*	--/SSC	Forages along coastlines, open grasslands, savannas, and woodlands; often forages near lakes and other wetlands	Does not nest in California; rare but widespread winter visitor to the Central Valley and coastal areas	Recorded occasionally on the HAAF site in 1997; does not nest in California.
Northern Harrier (*Circus cyaneus*)	--/SSC	Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover	Throughout lowland California; has been recorded in migration at high elevations	Common with 10 seen foraging in fields on January 30, 2002; two harriers were observed foraging in the salt marsh during 1994; another harrier was observed nesting in the HAAF area during 1994 and 1997 surveys

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
White-tailed kite (*Elanus leucurus*)	--/FP	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border	Common with 8 seen foraging in fileds on January 30, 2002; nesting not documented yet but probably nests within the project area; nearest known nesting site is approximately 0.5 mile northwest of Novato; suitable foraging habitat occurs in grassland, agricultural, and marsh habitats
Loggerhead shrike *(Lanius ludovicianus)*	--/SSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter	Recorded on HAAF site in 1997, no nesting records on HAAF site.
Osprey *(Pandion haliaetus)*	--/SSC	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations	Nests along the north coast from Marin County to Del Norte County, east through the Klamath and Cascade Ranges, and in the upper Sacramento Valley. Important inland breeding populations at Shasta Lake, Eagle Lake, and Lake Almanor and small numbers elsewhere south through the Sierra Nevada. Winters along the coast from San Mateo County to San Diego County	Recorded on HAAF site in 1997; also observed perching in trees by Pacheco Pond near HAAF

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Bald eagle (*Haliaeetus leucocephalus*)	T/E	In western North America, nests and roosts in coniferous forests and woodlands within 1 mile of a lake, a reservoir, a stream, or the ocean	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin; reintroduced into the central coast area; winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierras, and east of the Sierra Nevada south of Mono County; range expanding into the western Sierra Nevada foothills	Potential occasional forager on HAAF; no suitable nesting habitat in the project area; not a known wintering area
Prairie Falcon *(Falco mexicanus)*	--/SSC	Nests on cliffs or escarpments, usually overlooking dry, open terrain or uplands	Permanent resident in the south Coast, Transverse, Peninsular, and northern Cascade Ranges, the southeastern deserts, Inyo-White Mountains, foothills surrounding the Central Valley, and in the Sierra Nevada in Modoc, Lassen, and Plumas Counties. Winters in the Central Valley, along the coast from Santa Barbara County to San Diego County, and in Marin, Sonoma, Humboldt, Del Norte, and Inyo Counties	Recorded occasionally on HAAF site in 1997, no nesting habitat on HAAF site.

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
American peregrine falcon (*Falco preregrinus anatum*)	E/E	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large populations of other bird species	Permanent resident of the north and south Coast Ranges; may summer on the Cascade and Klamath Ranges south through the Sierra Nevada to Madera County; winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range	No suitable nesting habitat; potential occasional visitor during migration and in winter; recorded foraging on HAAF in 1997.
California black rail (*Laterallus jamaicensis coturniculus*)	SC/T	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations	Permanent resident in the San Francisco Bay and east-ward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties	The tidal marsh provides high-quality nesting and foraging habitat; observed in the salt marsh at HAAF (Garcia per. comm.); known in Novato Creek marshes.
California clapper rail (*Rallus longirostris obsoletus*)	E/E	Restricted to salt marshes and tidal sloughs; usually associated with heavy growth of pickleweed; feeds on mollusks removed from mud in sloughs	Marshes around San Francisco Bay and east through the Delta to Suisun Marsh	Tidal marsh provides high-quality nesting and foraging habitat; observed in salt marsh at HAAF (Garcia per. comm.); known in Novato Creek marsh.

Table D-2. Continued

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Western snowy plover (coastal population) (*Charadrius alexandrinus nivosus*)	T/SCC	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County	No records; no suitable nesting habitat; could forage in seasonal wetlands and mudflats in the project area
California least tern (*Sterna antillarum browni*)	E/E	Nests on sandy, upper ocean beaches, and occasionally uses mudflats; forages on adjacent surf line, estuaries, or the open ocean	Nests on beaches along the San Francisco Bay and Delta and along the southern California coast from southern San Luis Obispo County south to San Diego County	No records; no suitable nesting habitat; could forage in shallow water beyond the salt marsh
Short-eared owl (*Asio flammeus*)	--/SSC	Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	Permanent resident along the coast from Del Norte County to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations	One observed on January 30, 2002; salt marsh and fields within the project area are suitable nesting and foraging habitat; recorded on HAAF site in 1997.
Western burrowing owl (*Athene cunicularia hypugea*)	SC/SSC	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Formerly nested along the edges of the runway and levees at HAAF; none observed during 1994 field surveys; LSA found and passively relocated 7-9 individuals from HAAF site in 1997; could be a winter visitor, irregular visitor, or resident

Table D-2. Continued

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Little willow flycatcher (*Empidonax traillii brewsteri*)	SC/E	Riparian areas and large, wet meadows with abundant willows for breeding; usually found in riparian habitats during migration	Summer range includes a narrow strip along the eastern Sierra Nevada from Shasta County to Kern County and another strip along the western Sierra Nevada from El Dorado County to Madera County; widespread in migration	No records; no suitable nesting habitat occurs in the project area; potential occasional forager on HAAF site.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	SC/SSC	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover	Found only in the San Francisco Bay area in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda Counties	Suitable habitat occurs in tidal marshes in the project area; observed at the project area in coastal salt marsh; previously observed in or near confluence of Arroyo San Jose and Pacheco Creek.
Bell's sage sparrow (*Amphispiza belli belli*)	SC/SCC	Prefers chaparral habitats dominated by chamise	Western Sierra foothills from El Dorado County south to Mariposa County, inner Coast Ranges from Shasta County southward, extending to coastal area from Marin County to San Diego County; from southern San Benito County to San Bernardino County; absent from innermost Coast Ranges and desert slopes of San Gabriel and San Bernardino Mountains	No records; no suitable habitat
San Pablo song sparrow (*Melospiza melodia samuelis*)	SC/SCC	Brackish and tidal marshes supporting cattails, tules, various sedges, pickleweed, and riparian scrub	Restricted to San Pablo Bay area	Suitable tidal marsh habitat occurs in the project area; observed in saltmarsh habitat during 1994, 1997 and 2002

Mammals

Table D-2. Continued

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Suisun ornate shrew (*Sorex ornatus sinuosus*)	SC/SSC	Tidal, salt, and brackish marshes containing pickleweed, grindelia, bulrushes, or cattails; requires driftwood or other objects for nesting cover	Restricted to San Pablo Bay and Suisun Bay, both in Solano County	No records; not likely to occur in the project area
Greater mastiff bat (*Eumops perotis californicus*)	SC/SSC	Roosts and breeds in deep, narrow rock crevices; may also use crevices in trees, buildings, and tunnels; forages in a variety of semiarid to arid habitats	Occurs along the eastern San Joaquin Valley from El Dorado County through Kern County; also found along the south Coast, Peninsular, and Transverse Ranges from San Francisco to the Mexico border	No records; suitable roosting sites exist in the project area, but no presence of species found on HAAF site.
Long-eared myotis (*Myotis evotis*)	SC/--	Occurs primarily in high elevation coniferous forests, but also found in mixed hardwood/conifer, high desert, and humid coastal conifer habitats	Sierra Nevada, Klamath Mountains, Coast Ranges, and Transverse and Peninsular Ranges	The project area is at the edge of the species' range; no suitable roosting sites
Fringed myotis (*Myotis thysanodes*)	SC/--	Found in a wide variety of habitats from low desert scrub to high elevation coniferous forests. Day and night roosts in caves, mines, trees, buildings, and rock crevices	Sierra Nevada, Klamath Mountains, Coast Ranges, and Transverse and Peninsular Ranges	The project area is at the edge of the species' range; no suitable roosting sites
Long-legged myotis (*Myotis volans*)	SC/--	Most common in woodlands and forests above 4,000 feet, but occurs from sea level to 11,000 feet	Mountains throughout California	The project area is at the edge of the species' range; no suitable roosting sites
Yuma myotis (*Myotis yumanensis*)	SC/--	Roosts colonially in a variety of natural and human-made sites, including caves, mines, buildings, bridges, and trees; in northern California, maternity colonies are usually in fire-scarred redwoods, pines, or oaks; forages for insects over water bodies	Considered common and widespread in northern California; colonies known from Marin and San Francisco Counties	The project area is at the edge of the species' range; suitable roosting sites exist in project area, but no presence of species found on HAAF site.

Common and Scientific Name	Legal Status[a] Federal/State	Habitat Requirements	Distribution in California	Occurrence in the Project Area
Pallid bat (*Antrozous pallidus*)	SC/SSC	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts	Occurs throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations	Suitable roosting sites exist in the project area, but no presence of species found on site.
Pacific western big-eared bat (*Plecotus townsendii townsendii*)	SC/SSC	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after onsite visit	Coastal regions from Del Norte County south to Santa Barbara County	No records; suitable roosting sites exist in the project area, but no presence of species found on HAAF site.
Saltmarsh harvest mouse (*Reithrodontomys raviventris*)	E/E and FP	Brackish and salt marshes; primarily associated with pickleweed	San Francisco, San Pablo, and Suisun Bays; western most portion of the Delta	Suitable habitat exists along the salt marshes in the project area; assumed to occur in the salt marsh in the project area
Point Reyes jumping mouse (*Zapus trinotatus orarius*)	SC/SSC	Moist, marshy habitats with grasses and forbs	Confined to the Point Reyes area	No records; no suitable habitat

Note: Unless otherwise indicated, all survey results are taken from U.S. Army Corps of Engineers 1996.

[a] Status explanations:

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

PE = proposed for federal listing as endangered under the federal Endangered Species Act.

PT = proposed for federal listing as threatened under the federal Endangered Species Act.

C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.

SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.

-- = no listing.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

R = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

FP = fully protected under the California Fish and Game Code.

SSC= species of special concern in California.

-- = no listing.

Appendix E

Air Conformity Analysis Estimate

Appendix E
Conformity Analysis Estimate

The air quality analysis for ozone precursors examined three aspects of construction:

- On-site excavation, loading, and vehicle activity
- Off-site hauling of soil
- Worker vehicle travel

An emissions estimate was prepared for the organic gases (ROG), and oxides of nitrogen (NOx), due to the non-attainment status of the San Francisco Bay Area for ozone.

A conservative yearly estimate was used to compare with EPA and BAAQD conformity thresholds for ozone precursors. All construction activity during was assumed to be conducted 8 hours a day for 250 days per year.

Construction Vehicle Activity Emissions Estimates

This section describes the methodology used to estimate the construction equipment and vehicles on-site, number of hauling dump trucks, number of workers, worker commute trips, and haul trips associated with remediation activity. The assumptions about vehicles, equipment, and trips are the same as noted in Appendix C.

Construction Equipment and Vehicles On-Site

The type and number of construction vehicles needed for remediation activity were estimated. For this project, a maximum of eight scrapers/excavators and two loaders would presumed to be needed for earthmoving and haul truck loading at any one time. Scrapers/excavators were assumed to be the primary type of equipment used to both excavate and move soil on-site. The use of more than eight scrapers for this project could result in congestion problems because the vehicles would start to interfere with each other. A maximum of two loaders was presumed to fill trucks for either on-site soil movement or off-site soil hauling.

In addition to the scrapers/excavators and loaders, eight on-site dump trucks were assumed to be needed to move soil on-site, for fuel supply, for wetting down dry soil, for maintenance, and other on-site activity. A total of eighteen construction vehicles are assumed to be used on-site at the peak of remedial activity.

Dump Trucks for Hauling Soil Off-Site

An estimated 8-40 cubic yard dump trucks were presumed to support the off-site hauling activity.

Construction Employees

The number of employees was estimated by assuming one employee per construction vehicle, for a total of 26 employees.

Daily Worker Commute Trips

The number of daily worker trips was estimated. Each worker was presumed to arrive in his or her own personal vehicle. Thus, fifty-two daily commute trips were estimated for this project: 26 trips during the morning commute and 26 trips during the evening commute. In addition, 26 additional trips during the lunch hour were presumed, assuming that half of the workers go off-site for lunch or to run errands.

Soil Hauling Trips

As noted above, a total of 8 large dump trucks are presumed to be in use to haul soil off to appropriate disposal sites. The characterization of the material will determine the requisite disposal site. As a conservative estimate, it was presumed that 90 percent of the soil is hauled to the Altamont Landfill in Alameda County; 5 percent to the Redwood Sanitary Landfill in Novato; and 5% to the Kettleman Hills Landfill in Kettleman City. An average truck trip length was presumed based on this apportionment. Each dump truck was assumed to make two runs per day, resulting in a total of 32 trips per day.

Emissions Estimate

The assumptions above were then used to estimate the maximum yearly emissions. As shown in Table E-1, the estimates of total annual emissions from construction activity during remediation of NOx and ROG are 40 tons and 3 tons, respectively. These amounts are less than the EPA conformity thresholds of 100 tons and 50 tons respectively.

The assumptions used were conservative, and this estimate probably overestimates the amount of annual emissions in the busiest remediation year. For example, the estimate presumes hauling of soil for 250 days/year, based on 8 dump trucks making 2 trips/day. Presuming 40 cubic yards/truck, this amounts to 160,000 cubic yards in one year; whereas the total estimated volume of soil to be off-site is under 80,000 cubic yards. Similarly, the average amount of daily on-site activity is likely to be less than that assumed in this estimate.

Table E-1: Emissions Estimate for Construction Vehicles				
Commute Assumptions - Construction				
Workers (at peak)	26			
Haul Trucks (at peak)	8			
Construction days/year	250			
Haul Trip Distance (One-Way)	**Miles**	**Assumed %**	**Scaled Miles**	
Redwood Sanitary Landfill	9	5	0.45	
Altamont Landfill	68	90	61.2	
Kettleman Hills Landfill	232	5	11.6	
Average for estimate			73.25	
Daily miles (max.)	**Commute**	**Lunch**	**Dump trucks**	
Miles (one-way, average)	15	5	73.25	
Trips/day	52	26	32	
miles/day	780	130	2344	
Emission Factors (lbs/hr) - Construction On-site				
	ROG	**NOx**	**Load Factor**	**# of Equipment**
Scraper/Excavator	0.27	3.84	0.66	8
Tracked Loader	0.095	0.83	0.465	2
Off-Highway Truck	0.19	4.17	0.41	8
Emission Factors (grams/mile) - Construction Commute and Hauling Off-site				
	ROG	**NOx**	**Load Factor**	**# of Equipment**
Dump Truck	1.22	8.45	1	8
Auto	0.2	0.39	1	26
Emission in Tons/Year - Construction				
	ROG	**NOx**		
Emission for Construction On-Site	2.14	34.72		
Emission for Commute/Lunch	0.04	0.08		
Emission for Soil Hauling Off-site	0.79	5.45		
Total Construction	***3.0***	***40.3***		
Conformity Threshold	50	100		

Response to Comments

General Information

This document presents responses to comments submitted by agencies, individuals, and organizations concerning the Draft Subsequent Environmental Impact Report (SEIR) for the Hamilton Army Airfield, Main Airfield Parcel Record of Decision/Remedial Action Plan (ROD/RAP). The Draft SEIR, prepared for the California State Coastal Conservancy (Conservancy), was made available to the public and regulatory agencies for review and comment during the comment period from June 5, 2003 to July 21, 2003.

The Guidelines implementing the California Environmental Quality Act (CEQA) require that written responses be prepared for all written and oral comments received on a Draft EIR during the public review period. CEQA Guidelines Section 15132 specifically states:

The Final EIR shall consist of:

a. The Draft EIR or a revision of that draft.

b. Comments and recommendations received on the Draft EIR either verbatim or in a summary.

c. A list of persons, organizations, and public agencies commenting on the Draft EIR.

d. The response of the Lead Agency to significant environmental points raised in the review and consultation process.

e. Any other information added by the Lead agency.

This Final SEIR has been prepared in compliance with these Guidelines, as well as with applicable procedures of the Conservancy.

Comments on the Draft SEIR were received in letters submitted during the public comment period. Public comments were also provided during a joint hearing for the ROD/RAP and the Draft SEIR on July 17, 2003. Comments at the public hearing were provided on both the ROD/RAP, the Draft SEIR, and the overall

Hamilton Wetland Restoration Project. Responses are provided below for those comments that are specifically relevant to the SEIR. Comments on the ROD/RAP are provided in the Final ROD/RAP.

The comments and responses are grouped into two categories: state agencies and individuals and organizations. Responses are provided immediately following each comment. Underlined text in the responses identifies where new text has been incorporated into the Final SEIR, while ~~Strikeout~~ text in the responses indicates where text we removed in the Final SEIR. Table 1 below identifies the commenters and the pages on which the comments begin.

Table 1. List of Commenters and Location of Responses

	Commenter	Page
State Agencies		
S-1	California Department of Transportation (Caltrans)	3
Individuals and Organizations		
I-1	Friends of Novato Creek	6
I-2	Barbara Salzman (comments made at the public hearing)	7

S-1 California Department of Transportation (Caltrans)

S-1.1 – Table 3.7-3. No turning movements at the studied intersections are included in the DSEIR. Consequently, we can not validate any of the results presented.

This SEIR tiers off the 1998 HWRP EIR/EIS, which was incorporated by reference. Since the proposed project would result in only minor, temporary trip generation, the LOS and turning movements of potentially affected intersections have not been revised or detailed in this document. Although development has continued to occur in and around HAAF, substantial traffic improvements, as described in response to comment S-1.4 below, have been completed to mitigate for traffic increases. The LOS for these intersections are considered to accurately reflect current conditions at these intersections.

S-1.2 – Table 3.7-3. It is unclear if the level of service (LOS) results are based on existing traffic volumes or future year projected traffic. In either case, what year does the information in this table represent?

The LOS for intersections identified in Table 3.7-3 are 2010 conditions. The 2010 conditions reflect cumulative development conditions on the Hamilton Army Airfield, including residential and commercial development on the former HAAF and wetland restoration on the Main Airfield Parcel.

S-1.3 – Table 3.7-3. The note seems to indicate that some improvements are assumed at some of the study intersections. Specifically, what are these improvements and have any been completed?

The LOS in Table 3.7-3 present projected traffic conditions in 2010. The title of Table 3.7-3 should be revised to read:

> Table 3.7-3. ~~Summary of~~ Year 2010 Intersection Levels of Service ~~and Peak Hour Freeway Operations~~

S-1.4 – Table 3.7-3. If some of the improvements have not been made, what is the likelihood that this project would go forward without the assumed improvements? What is the expected LOS for intersections at which improvements have not been made (if applicable)?

Roadway improvements required for the New Hamilton Partnership Master Plan Project included the following:

- modification of Ignacio Boulevard interchange to include a new loop on-ramp from southbound Nave Drive to northbound U.S. 101;
- improvements to the Nave Drive, including south extension of the four-lane segment of Nave Drive, improved bike lanes, additional turn lanes and new signals at intersections, and improved approach to the Ignacio Boulevard interchange;
- improved loop off-ramp from southbound U.S. 101 to eastbound Ignacio / Bel Marin Keys Boulevard;
- improved circulation on the Ignacio / Bel Marin Keys Boulevard overpass to U.S. 101; and
- improvements to Enfrente Drive, primarily involving intersection modifications.

Based on conversations with City of Novato staff, these improvements, which were assumed in the projections of capacity and operation, as noted in Table 3.7-3, have been completed.

S-1.5 – Table 3.7-3. The words "and Peak-Hour Freeway Operations" should be removed from the table's title.

Please see response to comment S-1.3 above.

S-1.6 – Table 3.7-4. The table shows that, for most freeway segments studied, year 2010 traffic demand exceeds the freeways capacity. In reality, there are several freeway bottlenecks that constrain traffic flows in these segments. Consequently, the results presented do not accurately reflect freeway conditions that would be expected in year 2010.

Year 2010 conditions are based on cumulative conditions calculated for the disposal and reuse of HAAF. These calculations were derived by comparing the projected traffic volume under cumulative conditions with the capacity of each highway segment. No improvements to Highway 101 or State Route 37 were assumed. Bottlenecks in the highway system are reflected in the segment capacity used to calculate the LOS for each of the freeway segments.

S-1.7 – Impact T-2: Impacts to Freeway LOS during remediation. The proposed project will add vehicle trips to State Route (SR) 37 and U.S. 101, which currently operate at LOS during the peak periods. The DSEIR should provide mitigation for this significant impact to SR 37 and U.S. 101. We recommend the project sponsor pay a "fair-share" fee towards mitigating the significant cumulative impacts to SR 37 and U.S. 101.

The Conservancy was not able to identify any fair-share fee programs to which it could contribute to address potential traffic impacts to Highway 101 or State Route 37. Local, regional, and State transportation and transit programs, including Caltrans, Marin County, Marin County Congestion Management Agency, City of Novato, and Golden Gate Bridge Highway and Transportation District, were contacted but none administer any fair-share programs for these roadways. Establishment of separate a fair-share program by the Conservancy would be impractical since the project's contribution to regional traffic is very small and temporary. Establishment of a separate fair-share program would also delay implementation of the project, which is scheduled to begin in the fall of 2003. Such a delay would severely impact several other regional programs (i.e., the long-term management strategy for disposal of dredge materials) that are dependent on the future wetland restoration at Hamilton. For example, delay in implementing the ROD/RAP would delay dredge material disposal at the site and, finally, delay dredging in the Bay or result in continued use of open water disposal sites for dredge materials. The result of such delays could be impacts to the regional economy from constraints to port operations, or greater harm to the regional environment from open water disposal of dredge materials.

The Conservancy investigated project-specific mitigation measures but no feasible measures were identified that could avoid the generation of peak period trips on Highway 101 and State Route 37. The number of daily trips during the peak period and in the peak direction is likely to be minimized through development and implementation of the work plan for the ROD/RAP. Transport of materials during the peak hours and in the peak direction of travel is likely to be avoided since increased travel time to and from disposal sites would be more costly for the Army or its contractor(s). Some remedial work is also likely to be conducted in 10-hour workdays in order to minimize the time to complete the work. Under these work hours, workers would arrive at the site early in the morning (approximately between 6:00 a.m. and 6:30 a.m.) and would substantially avoid the morning peak period.

In addition, while the SEIR provides an estimate of peak daily trip generation, the daily rate is likely to be lower during much of the project's lifespan. The SEIR estimate represents the number of daily trips during the period of maximum activity. Since the project would involve periods of lesser activity or no activity, the number of daily trips during much of the site remediation would often be lower than the SEIR estimate. The SEIR also implicitly assigns all peak hour trips to the peak travel direction. The actual number peak hour trips in the peak direction would realistically be divided between the commute and non-commute directions.

Under CEQA, an impact is considered to be cumulatively significant if its "incremental effects are considerable when viewed in connection with the effects of past present, and reasonably foreseeable future projects" (CEQA Sec 15065). Even a project that would make a very minor or *de minimus* contribution to a cumulative impact would still result in a cumulatively significant impact if the resulting cumulative effect were severe. Thus, although the proposed project would add only a very small number of temporary trips, the cumulative impact is considered cumulatively significant under CEQA because of the severity of traffic conditions on Highway 101 and State Route 37.

Although this impact was characterized as a direct impact of the proposed project in the Draft SEIR, it is more accurately characterized as a cumulative impact since the projects contribution to traffic is minor, except as at it contributes to cumulative traffic conditions. Therefore, while the level of impact as described in the Draft EIR remains the same, this impact is considered to be a cumulative impact for purposes of the Final EIR.

I-1 Friends of Novato Creek

Friends of Novato Creek submitted a single set of comments for the ROD/RAP and the SEIR. The majority of these comments were related to the ROD/RAP and are responded to in the Final ROD/RAP. Responses are provided below for those comments that specifically address issues relevant to the SEIR or that would trigger a change in the ROD/RAP that requires revision of the SEIR.

I-1.1 Moving Hazardous Waste – All hazardous wastes that are moved, whether on or off the property, must comply with the substantive requirements of Title 27. There is no difference between waste being moved during the HWRP implementation and moving wastes that are identified as "BRAC sites." The ROD/RAP should not treat these events differently, as does the CEQA analysis – both of which are incorrect. Please correct these errors in the subject documents.

All contaminated soil that is removed from the site would be handled in accordance with appropriate hazardous waste laws. Title 27 is listed in the ROD/RAP as an Action Specific ARAR. There is no plan for the HWRP to move hazardous wastes onsite. The HWRP is only allowed to manage the PAHs along the runway and the Inboard Are-wide DDTs less than 1 ppm onsite. Soils with these contaminants at these concentrations are not classified as hazardous wastes. It is appropriate to treat the movement of soils classified as hazardous wastes differently than the movement of other soils.

Public Hearing Comments

I-2 Barbara Salzman

I-2.1 - During the presentation the statement was made that most of the alternatives were not viable and I was wondering, that sounds like some were but were rejected. So which ones were viable but were not chosen?

Response: The process of developing alternatives for the Main Airfield parcel was begun in previous documents and carried forward into the SEIR. Alternative reuse scenarios were considered in the 1996 Disposal and Reuse EIS. Wetland restoration was determined to be the preferred alternative and, therefore, no other types of reuse were considered in the SEIR. Alternative types of wetland restoration were considered in the 1998 HWRP EIR/S and, therefore, no other types of wetland restoration were considered in the SEIR. Finally, the ROD/RAP and its predecessor documents considered alternative remedial strategies to address contamination, pursuant to future wetland restoration at the site. The final remedial alternatives were carried forward into the ROD/RAP.

Several variations on the ROD/RAP remedial alternatives were identified in the SEIR but none of these alternatives were considered feasible. CEQA Guidelines (Section 15126.6(f)) state that in determining whether alternatives are feasible, a lead agency must consider if an alternative is "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." The remedial alternatives discussed in the SEIR were found to be infeasible either because they would result in greater impacts than the proposed project, due to greater ground disturbance and earth-moving activity, they would have impaired the ability of the site for wetland restoration, or they would have been prohibitively expensive.

I-2.2 - Okay, can you summarize what the extent of the remediation that will take place in the marsh, or are there areas that will be excavated? And how you going to mitigate for that?

Response: Remedial activities in the coastal salt marsh is expected to result in the temporary loss of approximately 6 acres and the permanent loss of approximately 0.3 acres. Mitigation measures in the SEIR require the excavations in the coastal salt marsh to be backfilled with suitable material and recontoured. Although the disturbed areas are expected to revegetate naturally, the SEIR includes mitigation measures that provide for active restoration if natural revegetation is not successful.

Remediation, transfer, and wetland restoration of the Main Airfield parcel at HAAF are logically linked and considered by USFWS as a single project. Remedial activities, as proposed in the ROD/RAP, would enable the HWRP to be implemented. The HWRP would create an estimated 485 acres of coastal salt marsh on the HAAF parcel, which would offset the small amount of coastal salt marsh permanently lost as a result of the ROD/RAP.

Notice of Determination

Form C

To: ☒ Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

☒ County Clerk, County of: Marin
Michael Smith

From: California State Coastal Conservancy
1330 Broadway, 11th floor
Oakland, CA 94612
(Public Agency and Address)

Subject: Filing of Notice of Determination in compliance with Section 21108 of the Public Resources Code

Project Title: Hamilton Main Airfield Parcel and Adjacent Coastal Salt Marsh Record of Decision/Remedial Action Plan Final Subsequent Environmental Impact Report

2003042007	Mr. Tom Gandesbery	510-286-7028
State Clearinghouse Number (If submitted to Clearinghouse)	Lead Agency Contact Person	Area Code/Telephone/Extension

Project Location (include county): City of Novato, Marin County, California

Project Description: Remedial Action Plan for clean up of former Hamilton Army Airfield

This is to advise that the California State Coastal Conservancy ☒ Lead Agency ☐ Responsible Agency has approved the above-described project on August 14, 2003 and has made the following determinations regarding the above-described project:

1. The project ☒ *will* ☐ *will not* have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures ☒ *were* ☐ *were not* made a condition of the approval of the project
4. A Statement of Overriding Considerations ☒ *was* ☐ *was not* adopted for this project.
5. Findings ☒ *were* ☐ *were not* made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at: California State Coastal Conservancy offices, 1330 Broadway, 11th floor, Oakland, California.

[signature]	August 15, 2003	Project Manager
Signature (Public Agency)	*Date*	*Title*

Date received for filing at OPR: ____________